Story and Pictures in this issue of Milwaukee Sheet Metal Outing.

AMERICAN ARTISAN and Hardware Record

VOL. 86. No. 7. 620 SOUTH MICHIGAN AVENUE, CHICAGO, AUGUST 18, 1923. $2.00 Per Year.

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SMOKELESS FURNACE ATTACHMENT

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Thoroughly Covers the Hardware, Stove, Sheet Metal, and Warm Air Heating and Ventilating Interests

AMERICAN ARTISAN and Hardware Record

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BUSINESS THIS FALL WILL BE GOOD IF YOU MAKE IT SO

Very few objects are gained that are not fought for.

The man who has made a success of his business always has had to fight for it.

The man who is not willing to fight for the thing he has or for the thing that he wishes to possess—within legal and ethical lines, of course—has no right to complain if he loses what he has or fails to obtain what he wants to possess.

It is the same way with business.

Two men start in business under similar circumstances. One prospers, the other barely makes a living and possibly fails absolutely. Why?

Because the first was willing to seek places where he might sell his merchandise or his work and was willing to use his brains and his physical energy and his money to induce the prospect whom he sought and found to think as he did about the particular transaction.

The other man—as good a buyer, possibly; as good a workman; as careful and honest as the first—had the mistaken notion that the sign over his place of business was all that was needed to bring people to him. He was unwilling to spend energy, thought and money in making them even think of him.

Familiar stuff, you say.

It is—and so is history.

But the man who is unwilling to profit by what history and experience has proven has no place as an owner of a business.

So when we consider the prospects for the coming fall, let us also consider what "history" has to say about the farmer and his ability to purchase.

One of the principal market reviews has this to say:

"The American farmer doesn't seem to regard his plight in quite as pitiful light as painted by some of his professed political sponsors. He is going right along buying merchandise to meet current needs, particularly where prices are to his liking. This is the experience of the big Chicago mail order houses.

"July sales of Sears, Roebuck & Company totaled $14,960,939, an increase of 22.18 per cent over July, 1922. Furthermore, last month's business was somewhat larger than in June, although usually there is a seasonal recession in midsummer. Sales for the seven months ended July 31 totaled $121,738,196, a gain of 28.49 per cent over the corresponding period last year. July sales of Montgomery Ward & Company were $7,491,908, an increase of 46.61 per cent over July, 1922, and sales for the seven months aggregated $71,928,928, a gain of 53.33 per cent over last year's period."

In other words, the farmer has some money and is willing to spend it.

Are you going to get your share?

You cannot get it by wishing.

You must go after it.

Random Notes and Sketches.

By Sidney Arnold

Forty years ago E. A. Stowe mailed the first copy of his *Michigan Tradesman,* dated August first.

Compared with the fortieth anniversary issue which I have just been reading and which contains 132 pages, the first number was a puny looking publication, but behind it there was a mind and a purpose and a will and a sturdy body, and all of these combined have made the *Michigan Tradesman* a truly great business paper for the general merchants in the territory which it serves so well.

The same strong mind, the same set purpose, the same firm will are still there, and even if the body is not quite so sturdy and young, yet the *Tradesman* goes ahead from year to year.

Probably the greatest tribute that anyone could pay to my friend, Mr. Stowe, will be found in the following statement which was made by a former associate of his two years ago:

"From the very first the *Tradesman* had a definite policy and expressed and maintained it forcefully and fearlessly. I recall the first libel suit threat, which had it been successfully instituted, would have wiped out the meager capital of the business, while, had the editor taken fright and receded from the position he had taken, he would have ended forever any chance for the usefulness and prestige which his paper has come to enjoy. I never knew a man to come to the office in those early days with a grievance—either real or fancied—that E. A. did not meet him more than half way. So long as the visitor was courteous and gentlemanly he was treated with the greatest possible respect; but if he threatened suit or intimated that he would 'see his lawyer,' E. A. abruptly terminated the interview with the remark that if the visitor started anything, he must be prepared to follow the matter to the court of last resort, because the *Tradesman* never considered any cause settled until it had been passed upon by the Supreme Court. There is certainly something uncanny in E. A.'s legal experiences, because he has never gone to the Supreme Court without coming home victor."

Here is "Many years of continued service and happiness" to you, E. A.

* * *

I never had much use for these so-called "efficiency experts." Usually their "efficiency" calls for a lot of extra expense and results in a lot of red tape, and frequently the concern which employs one of them is glad to get rid of him at any price.

Of course, there are men who make a real study of organizing office and factory routine and whose practical knowledge is valuable to those who employ them, but in too many cases the "expert" is an expensive and often harmful attachment to a business.

They set up rules which must be obeyed implicitly, allowing no leeway for unusual cases, and sometimes they become victims of their own rules, as in this case:

Hardfast, the efficiency expert, had just returned from lunch after having completed the process of turning the office into a model of system.

"Anybody call while I was out?" he snapped to the office boy.

"Yessir!" answered the lad, just as snappily. "Your wife."

"What did she say?"

"She wanted to leave a message, sir, but I transmitted your orders and she hung up, but said she'd see you about it later."

"Transmitted *what* orders?"

"That 'To whom it may concern: No personal messages will be received or transmitted over the office phones on and after March 1, 1923.'"

My friend John P. Wagner not only makes a good steel furnace which you have come to know as the "Success," but he also knows how to put words together in such a way that they mean something and so that you will be likely to remember what he says.

Here is a bit from the July issue of his house organ:

If there's anything that makes me hot under the collar and want to punch somebody in the nose, it is to find in an employe disloyalty.

Disloyalty has undermined many a man at a time when success was within easy reach.

Disloyalty is a poison deadlier than cyanide, for it withers character, self-respect, manhood, and worse—the brain itself. It is the vilest of all destructive elements.

Disloyalty never fills a pay envelope or wins promotions; on the other hand, it has put the skids under many an employe who was given every chance to make good.

Loyalty never meant kowtowing and bumping foreheads on the floor, or yes-ing your employer to death, but it does mean living up to what your employer and your house expects of you.

Your employer may not always be right, but if you can see what is wrong and help to correct it you are a loyal friend indeed. But if you conjure up faults and mistakes in your house and publish them far and wide instead of trying to correct them, you are too damnably mean to hang and should be branded where all the world could see your disloyalty.

About the meanest man on earth, above the earth or below the earth, is the fellow that betrays the trust of the house that pays him his salary. This is ingrained ingratitude and such an act is bound to reflect to that person's sorrow.

Whatever you do, be loyal, loyal to your house and to your employer every hour of the day by being loyal to yourself and by maintaining your self-respect.

Loyalty leads to success, to happiness, to life. Disloyalty is an abomination.

Dr. Palmer Discusses Modern Tendencies of Ventilation Practice.

Detroit Health Official Traces Development of Ventilating Apparatus During Past Fifty Years

IN THE preceding article by Dr. George T. Palmer, Epidemiologist for the Department of Health, speaking before the members of the American Society of Heating and Ventilating Engineers, gave an outline of how the conceptions of ventilation have changed throughout the last fifty years, taking up several different phases of the subject. The first of the series of three articles appeared in AMERICAN ARTISAN for August 4, on pages 13 to 17 inclusive.

This article is the second of the series of three and deals with the twentieth century contribution to ventilation.

Twentieth Century Contribution to Ventilation.

The last twenty years have been characterized mainly by an increasing respect shown to the thermal factors of the atmosphere, with a corresponding diminishing importance attached to the chemical constituents.

That the badness of bad air is due more frequently to overheating and excessive moisture than to any other cause was brought out in most convincing fashion in 1905 by Flugge and his pupils, Heymann, Paulsand and Ercklentz. They placed normal people in a cabinet of 3 cubic meters capacity. In four hours' time the CO_2 had risen to 1.0 and 1.5 per cent (100 and 150 parts per 10,000 as compared with 4 parts in outdoor air). No illness or discomfort was felt so long as the temperature and humidity were kept down. When the temperature was allowed to rise discomfort was felt. At a temperature of 75 degrees and 89 per cent relative humidity and a CO_2 content of 1.2 per cent, the subjects felt very uncomfortable. on the outside experienced no discomfort on breathing the air of the chamber through a tube. A person entering the chamber experienced immediate discomfort. When a fan was set in motion within the chamber, stirring up the air, there was immediate relief even with no fresh air from outside. The layer of warm moist air next to the skin was set free and distributed more thoroughly over the entire chamber.

The interpretation of these experiments is that it is not the chemical constituents of used air which cause unpleasantness to those in the room. It is wholly the increasing heat and moisture which are responsible for discomfort.

This work has been repeated a number of times with the same results. Leonard Hill and his English colleagues, Flack, McIntosh, Rowlands and Walker, in 1913 published their account of a repetition of Paul's work with complete confirmation. The New York State Commission on Ventilation found substantially the same results in 1914 and 1915, and its work was on a larger scale and covered longer periods of time. Instead of hours, subjects were kept under varying atmospheric conditions for the entire day, day after day, and for as much as six successive weeks. The Commission found that overheating, even slight overheating, 75° Fahr., increases discomfort and brings on premature fatigue. It increases body temperature and the heart rate. When working on the piece work basis, a bonus being paid for quantity of work done in addition to a flat wage, subjects did 13 per cent less work at 75 degrees than at 68 degrees. *It mattered not whether the chamber was bathed in fresh outside air (45 cubic feet per person per minute), or whether it was sealed so tightly that the CO_2 rose to* 30, 50 *and even* 130 *parts per* 10,000, *so long as the room temperature was kept down to* 68 *degrees, the subjects did just as much work and were quite contented.* But let the temperature rise to 75 degrees, even though the humidity did not exceed 50 per cent, work slackened, perspiration began and discomfort arose. The only indication of any unfavorable effect of stale air—that is, air undiluted with fresh air—was in the slightly lessened food consumption, and this was most noticeable in the first or second week, largely, if not entirely, disappearing in the following weeks.

The above are the contributions of the laboratory man, physician, physiologist, chemist and physicist. The practical ventilating engineer, architect and layman may look askance at those experiments on a few people in small rooms, suspecting that the same laws will not hold true with many people in large rooms. This question has often been propounded. Even if these short-time experiments prove that air vitiated by the products of human exhalations is not harmful, is it not possible that a long-continued stay under these conditions, even though the air is cool, will eventually affect health? The answer to this is that the best of experimental evidence shows that the chemical constituents of vitiated air of ordinary occupied rooms are innocuous to health, and until evidence is produced to the contrary it is entirely logical and scientific and a matter of common sense to abide by these findings.

How the Newer Experimental Evidence Has Affected Ventilation Practice.

Ventilation has inevitably been closely associated with heating. In the days before the mechanical blower and the steam radiator buildings were heated by stoves and furnaces. The stove heated the single room. The furnace was an elaboration of the stove with the addition of a jacket through which air passed and then ascended through ducts to a number of rooms. The temperature of the air had to be high, that is, above 100 degrees, to do its work. It was found that the distribution of this heated air was seriously interfered with by outside winds. Furthermore, the great heat of the

air caused an annoying sensation of dryness to occupants.

The steam and hot water radiator provided a convenient means of direct heating. This solved the heating question for the time being, but left the matter of ventilation to be dealt with independently. Air ducts were then added, and in the exhaust ducts it was customary to place steam pipes or burning gas jets to accentuate upward air currents. These ducts were usually too small in area to be effective and consumed a great deal of fuel.

The next step was the introduction of the steam-driven fan which forced air over heated coils or radiators. This method was used to ventilate and it was also depended upon to do the entire heating. This again introduced the same objections associated with the hot air furnace.

A modification of this plan was the placing of direct radiation within the room to supply heat and the use of blowers and indirect heating coils to furnish tempered air for ventilation. This is the arrangement most common today.

The introduction to rooms of large volumes of air in order to maintain the standard of 30 cubic feet per minute per person necessitated the use of more spacious ducts, for otherwise the velocity of the entering air was so great as to cause annoying draughts. Larger exhaust ducts naturally followed.

Improvement took place in air distribution, which involved more careful placement of inlet and exhaust registers. Engineering details likewise advanced as the use of this equipment became more general. The steam-driven fan gave way in many instances to the electrically-driven fan, and direct connected motors displaced the belt connections between motor and fan.

Automatic temperature control replaced manual control, and today the thermostat is an essential part of indirect heating and is quite common in connection with direct heating.

We can see today many efforts to effect improvements in air distribution. The exhaust fan was added to assist the plenum fan in keeping the flow of air confined to the channels provided and also to assist in the proportioning of this flow over the building. Efforts have been made to maintain air circulation wholly by exhaust fans, the plenum fans being omitted and air being admitted to each room through apertures in the outer wall, the air temperature being raised by contact with the direct radiation. The passage of cold air over the radiators resulted frequently in frozen pipes, particularly when steam pressure was low. Furthermore, a strong suction from the exhaust duct at times drew air from open doorways or other apertures and caused short-circuiting, with consequent reduction in the aeration of the room as a whole.

Twentieth Century's Ventilation Contribution

THIS article is the second of the series which embody the address by Dr. George T. Palmer, Epidermologist for the Department of Health, delivered at the annual meeting of the American Society of Heating and Ventilating Engineers, held at Chicago.

In this discussion Dr. Palmer takes up the twentieth century's contribution to Ventilation and how the newer experimental evidence has affected ventilating practices. Individual room temperatures, humidification and recirculation are also taken up.

Individual Room Ducts for Temperature Adjustment.

When the sun is shining the rooms in its path are warmed more than rooms on the shaded sides of a building. Consider the effect of this when the temperature of the indirect air supply is the same for all rooms. Some rooms become overheated, and to correct this condition the temperature of the air supply to the sun-exposed rooms should be reduced. The practice most commonly used now is to have a separate cold air supply controlled by dampers operated by thermostats in each room. A room that is too warm will have its warm air supply cut down by the damper and some cold air will be admitted to lower the temperature. This involves individual ducts to each room from the hot and cold air chamber in place of the single trunk duct leading up to a certain section of a building with branching ducts to each room.

The use of humidified air was ushered in just prior to the twentieth century and was prompted by both hygienic and economic considerations. There are many industrial processes, such as weaving, which require a relatively high moisture content in the rooms. Then also mechanical ventilation with its large volumes of air produced so much evaporation from the bodies of occupants as to cause annoying sensations of dryness. When cold outdoor air is heated to 60 or 70 degrees, the relative humidity changes from the 70's and 80's to 20 and 30 per cent. The heating of air reduces its relative humidity. When air is saturated with moisture (100 per cent relative humidity), a cubic foot contains at 30 degrees 1.94 grains of water; at 70 degrees, 7.98 grains. Thus, when outdoor air at 30 degrees and 80 per cent relative humidity is taken into a building and heated to 70 degrees, the resulting relative humidity is only 19 per cent. The actual quantity of water (absolute humidity) present is the same, but at 30 degrees this amount represents 80 per cent of all the moisture that the air could contain, whereas as 70 degrees this same amount represents only 19 per cent of what the air could contain. Warm air at a low relative humidity tends to extract moisture from its surroundings. It was to correct this condition that humidifying pans and steam jets were added to ventilating equipment. These have been superseded largely by air washers, which not only add moisture to the air, but also remove dust. Many installations today include air washers as an integral part of the ventilation equipment. This involves also some means of automatic humidity control.

Changes in Heating Practice.

In 1870 the stove and hot air furnace were most widely used for heating and ventilating. Hot water heating was being advocated for houses and steam was confined mostly to factories. Gravity ventilation in schools with supply ducts and heat acceleration in the exhaust ducts was not uncommon, but most schools had no provision whatever for ventilation. Mechanical ventilation was unknown in school buildings.

Thirty years later conditions had changed. We have an interesting picture of school ventilation in 1899 from the report of John Gormley. The Board of Education of the City of Philadelphia then had supervision over 447 schools and found:

13 were heated by direct steam radiation.

38 were heated by direct and indirect steam radiation.

152 were heated by hot air furnaces.

14 were heated and ventilated by blowers and steam coils.

4 were heated and ventilated by batteries of hot air furnaces, through which blowers forced air into the rooms, the blowers being operated by gas engines.

None were heated by hot water.

Many of the remaining were heated by stoves or by combinations of stoves and furnaces.

In schools heated by hot air furnaces and blowers driven by gas engines there was much complaint of the smell of hot oils, gas and noisy machinery. There was much vibration in the rooms above the machinery. Evaporating pans were provided for humidification, but were rarely used.

In 1921 the stove heated school building has disappeared, at least in the larger cities. Furnace heat in large schools is a rarity. Gravity ventilation with direct heat and the various mechanical systems—plenum, combined plenum and exhaust, and exhaust alone with direct-indirect heat—are in most common use.

As may be appreciated from the foregoing, the development of ventilation has proceeded from the simple to the complex. Each year has witnessed new and more elaborate equipment, and along with this advance has gone mounting cost. To offset the increasing expense there has been proposed a recirculation of the air within the building. Obviously much fuel will be saved if, instead of cold air from the outside, the warm air drawn from the building can be sent back through the supply ducts. Presumably this proposal would have been hooted with scorn in the days when carbon dioxide and organic effluvia reigned in their poisonous glory. However, Walter Snow urged recirculation of factory air as far back as 1891. Where the cubic space is great, this is an entirely feasible plan, for natural leakage through walls and around doors and windows is sufficient to prevent any unusual accumulation of odorous material in the air. Recirculation has worked out with apparent success and appreciable saving in fuel in the gymnasium of the Y. M. C. A. Training School in Springfield, Massachusetts. This method has much to commend it in places where the air space is ample and the vitiating factors—from human beings, illuminating gases and industrial processes—are relatively slight.

The best example which has come to our attention concerning this practice in a school building was described by Professor Larson in 1916. The Wisconsin High School at Madison was ventilated with apparent success by utilizing only the air which was returned from the rooms, and none from outside. The air supply was cut down to about 15 cubic feet per person per minute. Room temperature ran from 65 to 67 and relative humidity around 60 per cent. All air was passed through a washer before readmission to the rooms. The velocity of air entering the rooms was around 600 feet per minute, or double that in usual practice. Carbon dioxide ran as high as 20 parts per 10,000 and averaged above 10. By this method there was a saving in fuel of from 40 to 50 per cent. Larson makes this commentary: "Ventilation by recirculation is both efficient and economical. At the end of a year's run the teachers are almost unanimous in their praise of the system."

The point to be borne in mind in connection with this work is that this building was occupied only to about 75 per cent of its capacity, and the cubic feet of space per student was more than 350 as compared with a standard of 200 cubic feet in grade schools.

Thus with buildings having a large ratio of air space per occupant and with occupants moving about at frequent intervals during the day, recirculation offers an attractive method of ventilation. For crowded rooms or buildings it has disadvantages. Thus the New York State Commission on Ventilation found that recirculating the air of a single class room was associated with physical discomfort and odor. Some outside air had to be admitted to reduce odor. Air washing intensified odor, and recirculation was more successful with the air washer shut down. Ozone was used to reduce odor, but this likewise aggravated rather than helped the situation. The combination of ozone with the room odor was worse than the room odor by itself. Odor was less noticeable with humidities around 40 per cent or below than with higher humidities.

The Newer Ventilation Standards.

The primary purpose of ventilation in 1870 was to remove carbon dioxide and organic effluvia. This view had not altered greatly in 1881, for Leicester Allen, a mechanical engineer, wrote as follows:

"The end and purpose of ventilation is, therefore, to remove from inclosed spaces these emanations (referring to organic matter given off from human bodies and also carbon dioxide), together with any other poisons which may have become added to them either from leaks in gas pipes or fixtures, from soil pipes, from defects in water closets or from any other source."

The carbon dioxide content was the measure of ventilation. Allen

states that "When by the presence of people in an inclosed space the percentage rises from 6 to 7 parts (of CO_2) in 10,000, the ventilation is bad. When the proportion is less than this the ventilation is good."

The change in our conceptions of ventilation since the nineteenth century may be judged from Winslow's definition of good ventilation as recorded in Park's Public Health and Hygiene, published in 1920:

1. "The air should be cool, but not too cold."
2. "The air should be gentle, but not excessive motion, and its temperature should fluctuate slightly from moment to moment."
3. "The air should be free from offensive body odors."
4. "The air should be free from poisonous and offensive fumes and large amounts of dust."

Notice the order of these requirements, observe the omission of the CO_2 standard and the air supply standard of 30 cubic feet per minute per person and take note of the avoidance of set values in the definitions. The physical and cutaneous factors—temperatures and air movement—take precedence over the chemical and respiratory elements. There is a suggestion of variability in temperature and air motion as a desirable condition as opposed to uniformity in these conditions.

From the standpoint of the engineer who is called upon to design ventilating equipment, this definition will be criticized as too general.

The engineer needs something more specific. What temperature? How much air supply? What limits of fluctuation in temperature and air movement?

Winslow suggests a temperature between 65 and 68 degrees in the office and school room, and even lower in the factory and open air school, where physical work is performed or heavier clothing is worn.

No mention is made of the degrees of fluctuating air movement. Further experience must determine this figure in specific terms. The engineer may, however, act upon the theory that variability is wanted rather than uniformity, and in planning his fan equipment this point must be borne in mind.

As to the air volume and rate of change, there is no dogmatic assertion. This is a matter that must be worked out for specific purposes. In commenting on this point Winslow states: "The fact is that while 30 cubic feet per minute may be set as a rough standard often desirable to attain, it may be insufficient in certain cases, and in many other cases may be an unnecessarily high figure. Hygienists must insist on standards of air conditions actually maintained rather than on any arbitrary mechanical standard assumed to be capable of maintaining them. Any system which does not guard against overheating is inadequate, however large a volume of air may be forced into a room."

As to humidity, Winslow agrees that high temperatures combined with high humidities are particularly harmful. He does not lay stress on the hygienic influence of humidity at lower temperatures.

Scherr Bids for Furnace Repair Work.

The man who is wise is the man who advertises continuously. He may not have a large space, but his name and his business are kept before the public. This is a commendable practice and it shows that the right spirit is back of the business.

A clever method of letting the public know that you are equipped to take care of their furnace work has been evolved by H. G. Scherr, Dubuque, Iowa. The accompanying reprint from the Dubuque Tribune shows how Mr. Scherr goes after business and keeps his name and place of business in the lime light.

This advertisement embodies the commendable practice of combining an illustration and a large type head line, which in this case happens to be the firm name.

Perhaps a better stunt would have been to introduce the subject in a more emphatic manner. That is, have had a catchy head line, telling the story. In this way the attention arresting power of the ad would have been greatly increased. However, a good use of white space has been employed and the variation in the sizes of types is also good.

Hall Does Not Want to Miss a Copy of AMERICAN ARTISAN.

DEAR OLD ARTISAN:

The date on my wrapper at hand tells me that my subscription is due, and as I do not want to miss a single copy, you will find enclosed my check in payment of same. Send it to Hall & Pierce, instead of W. J. Hall, as formerly.

I desire to congratulate the management of AMERICAN ARTISAN. Every department is complete and full of helpful information. I could not improve on it.

WILL J. HALL.

Waterford, Ohio, August 7, 1923.

High class thinking, like high class goods, bring a high class price.

Typical Newspaper Advertisement of Furnace and Sheet Metal Work.

Fresh Air Essential to Healthful Heating, Farquar Tells Consumer in Selling Warm Air Furnace System.

Attracts Attention to Ad by Using Cozy Home Illustration and Explains Necessity of Peculiarly-Shaped Fire Box.

FURNACE manufacturers who approach the problem of marketing their products with the thought in mind that the people to whom they wish to sell neither know nor care anything about their business are sure to stack up ace high when it comes to figuring profits from sales.

This attitude of mind portrays the true state of affairs and the quicker the advertiser comes to this conclusion, the sooner he will produce copy that will overcome the objection to his product.

Why has the manufacturer any right to assume anything else? He has no right. He must put his product on the market and then advertise it in such a way as to draw attention and arouse curiosity. From this point he must nurse this curiosity along until he has aroused a genuine interest which will ultimately lead to the sale.

People must be shown how they can better their condition, raise their standard of living and add to their comfort before they will condescend to part with their money. This done, however, and they are only too willing to make the outlay necessary to secure the added convenience or comfort.

The ways and means of attracting attention and arousing curiosity are numerous. But the fundamental principles are always the same.

The Shape of the FarQuar Firebox —and Why
The only way to keep air fresh is to keep it moving.
Any obstruction merely retards the movement of the air and contributes that much toward stagnation—over-heating, etc.
When the cold air enters the large, roomy air chamber of
THE FARQUAR HEATING AND VENTILATING SYSTEM
it settles directly against the lower surface of the elliptically shaped firebox, as shown in diagram cut below. This part of the firebox is warmed by the extraction of the heat units from ash pan and smoke passage, hence begins to gently warm the fresh air which comes in contact with it
As this warmed air begins to rise, it passes upward along the smooth side of the firebox, with nothing to retard its movement. The absence of top surface prevents any "pocket" in warm air bonnet in which "dead" air can collect.
Instead it floods each warm air pipe, and passes into the rooms in a large volume gently warmed and moving at sufficient velocity to keep the rooms at a comfortable temperature in all kinds of weather.
That is why FarQuar Heated Homes are always refreshingly comfortable. The air is never devitalized and lifeless from over-heating. Instead it is pure, fresh and energizing
Our booklet, "The Science of Housheating," tells an intensely interesting story about the healthful heating of homes. Write for free copy.
The Farquhar Furnace Co.
206 FarQuar Bldg.
Wilmington, Ohio
Another Important Feature—The FarQuar Automatic Control
Actuated entirely by the expansion and contraction of the firebox
Completely controls the fire, protects against overheat and its consequent dangers, and makes only one firing necessary every twenty four hours.

Distinctive Homes FarQuar Heated Residence of U. G. Race, Detroit

Fresh Air Essential to Healthful Heating

TOO many people forget the relation of fresh air and adequate ventilation to the healthful heating of the home. Heat without ventilation becomes "stuffiness",—a decided lack of pure, fresh, invigorating air.

You can't get successful and adequate ventilation by merely opening the windows. Instead, such a practice defeats your purpose.

Ventilation should be a part of the heating system to insure permanently successful results. Thousands have found this true with—

THE FARQUAR HEATING AND VENTILATING SYSTEM

"I am very well pleased with the FarQuar Furnace. Personally, I prefer hot air heating with a constant supply of fresh air from the outside, rather than steam or hot water, neither of which furnish that constant supply of fresh air.
"The FarQuar draft control is an exceptionally valuable feature. It works automatically and constantly. There is nothing to get out of order. If I were building again, would use the FarQuar system."
(Name on Request)

FARQUAR FACTS
Perfect distribution of heat and uniform temperature in all rooms,—therefore not a portion

Home heating should be made safe and healthful as well as comfortable and economical. And yet thousands forget the danger of common "coal gas" or fire poison.

Carbon Monoxide is a dangerous combustion gas or fire poison, common to all heating systems. It quickly penetrates through cast iron, which heat makes porous, while it is almost impossible to prevent leakage of gas through the joints and seams of a riveted firebox.

The only safe protection is a one-piece steel fire-box, made continuous and imperforate by seamless welding, thus making gas leakage impossible. Such a firebox is an exclusive and patented feature with the FarQuar System.

If you would have the most delightful and healthful of all heating methods which gives a fresh invigorating atmosphere, write for our beautiful and interesting free booklet, "The Science of House Heating." You will enjoy its wonderful message.

The Farquhar Furnace Co.
709 FarQuar Bldg., Wilmington, Ohio

Pages from Booklet Directed to Consumers Which Explains Necessity for Ventilation as Well as for Heating a House.

The accompanying reprint of an advertisement used by the Farquar Furnace Company calls attention to the Farquar Sanitary Heating and Ventilating System.

The elements to arrest attention are indeed much in evidence in the form of a cozy residence. The points about the system are the fact that it provides for fresh air, so essential to healthful heating, and the reasons for the use of a certain peculiarly shaped fire box.

This is the type of ad in which the manufacturer assumes that the consumer knows nothing about the product and does not even give it a thought. He must be interested and then educated up to a point where he knows more about this furnace than he does about some other make. Then when he is in the market for a furnace the firm will certainly be given a chance before the order is placed.

Removing the Sword of Damocles.

There was once a man named Damocles who was envious of his king's position, his wealth, his power and his prestige. The king learned of the attitude of Damocles toward him and, being a good-natured king, obligingly turned his kingdom over to Damocles, giving the latter full power to reign as he saw fit. This pleased Damocles very much and he hastily donned the royal raiment and seated himself proudly upon the throne.

No sooner had he seated himself, however, than a noise in the upper regions of the Presence chambers caused Damocles to look up. In an instant his blood froze in his veins. Hanging directly above his head and suspended by a single hair was a great dagger-like sword. The slightest breath of air would cause the thread to part and Damocles would be no more.

Have you a sword of Damocles hanging over your business head?

Clean, forceful, authentic advertising copy well directed and timely will not only remove all swords of Damocles from over your head, but it will also move your goods with astonishing rapidity. It's worth the effort, try it and see.

Goebel Appeals to Cold Facts for His Warm Air Furnace Repair Work.

There is one practice in writing an advertisement which has much to commend it, and that practice is the introducing of a command in the head line. This type of head rarely if ever fails to attract the eye.

In the accompanying reprint from the Bowling Green, Ohio, Tribune, the copy writer has employed an excellent form of head line. In running over the page, the eye will always be attracted by a statement such as "Now is the time" and before the eye has had time to rush on to the next ad, the mind is asking the question "the time to do what?"

The wording of this ad is excellent; the spacing between the lines is sufficient so as to make the reading easy and the illustration is also coördinating. It would have improved matters considerably if the head line had been made to connect up more closely with the reading matter which follows. As it is, however, the ad is very good and can not fail to produce results favorable to Gus Goebel.

It must be the aim of all advertisers to attract attention and then tell their story to a person who is not in the least interested in what they have to say. The story must be told in such a way as to arouse the listener into a state of intense interest and then he will listen.

NOW IS THE TIME
You can laugh at your fuel bill this winter if you install one of Goebel's Majestic Furnaces.
Yes, I know it is still warm. But think of next winter, when it will be cold. Place your order now for a furnace so we can take care of you in time. Every user of my furnace is a satisfied user.
Call in let us show you a list of satised users.
GUS GOEBEL
W. WOOSTER ST.

Warm Air Register Makers Will Meet in New York City Tuesday, September Fourth.

The manufacturers of warm air registers will hold a special meeting in the forenoon of Tuesday, September fourth, preceding the meeting of the Joint Committee on Standardization of Warm Air Registers.

Both meetings will be held at Waldorf-Astoria Hotel, New York City, and a full attendance is looked for at both sessions.

Transitional Elbows Are Often Necessary on Ranges and Heaters Where Connection Between Collar and Chimney Is Short.

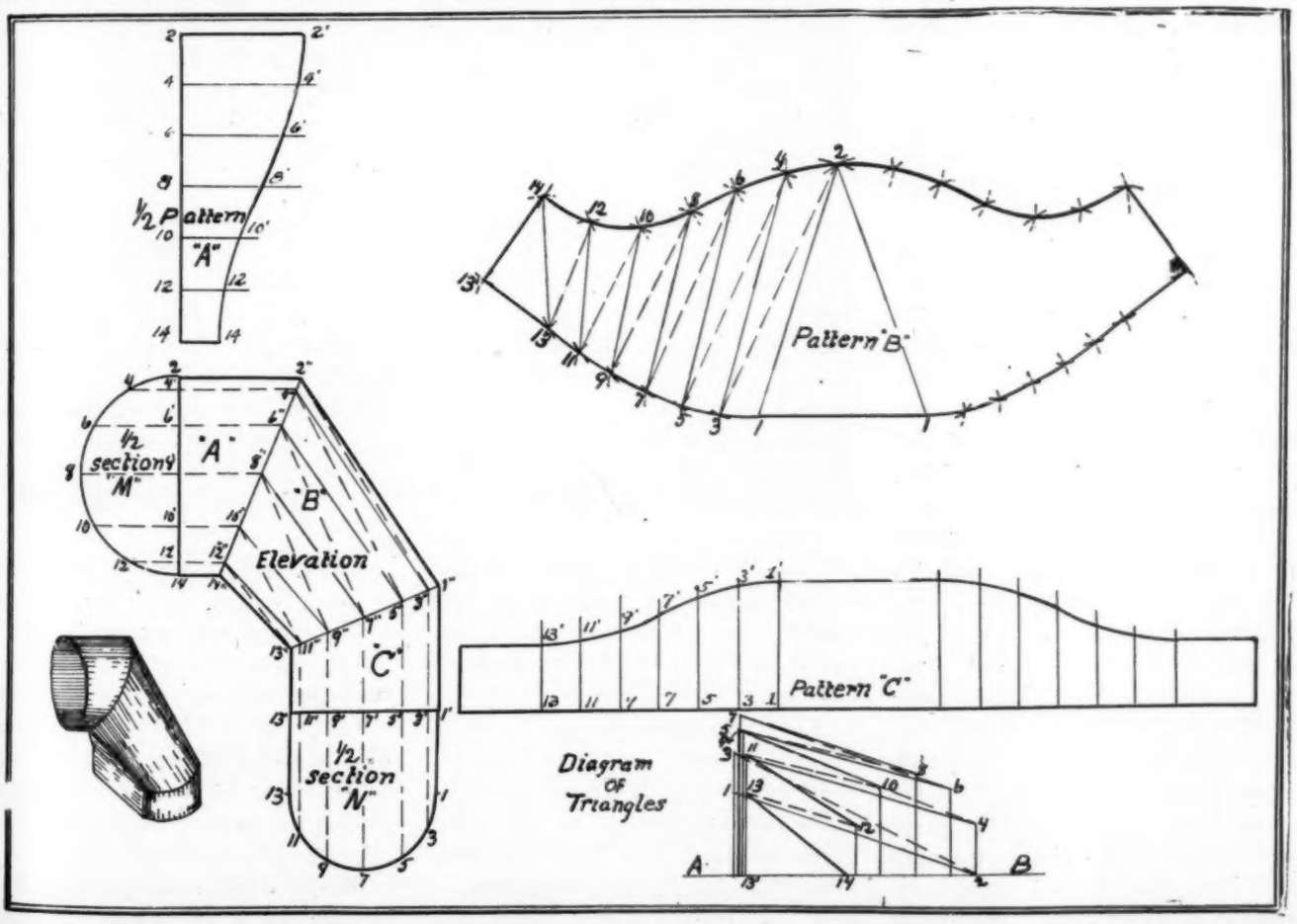
Working Drawing Describes in Detail How These Elbows Can Be Easily Laid Out to Suit Size of Round Pipe.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri.

VERY often on kitchen ranges and hot water heaters, or other heaters in basements, the connections between the collar of the stove and the chimney is so short that a transitional elbow must be made. Now the elevation is drawn to suit the size of round pipe and also oblong, and the rise it is to have. Otherwise we can treat it much as any elbow to establishing the miter lines. So draw the half section "N" to represent the oblong in and describe the half section "M" for the round in. Divide each in the same number of equal spaces, and draw lines to intersect the miter lines 2″-14″ and 1″-13″. Then join these points with lines, thereby dividing the middle piece into triangles as shown.

Observe the two end pieces "N" and "C" can be laid out as any ordinary elbow pattern. So we lay them out first by picking the girth from "N" and setting it above as 2-4-6-8-10, etc., in half pattern and draw stretchout lines, and from each point in miter line 2″-14″ erect lines to intersect those in stretchout at similar number, as 2′-4′-6′, etc. Sketch a line through these points and you have a half pattern for round end "A". The lower end "C" is laid out in a similar way, only picking the girth from half section "N" and setting it off in numerical order. Then, by bringing over lines from miter line 1″-13″, we cut off those lines in the pattern to suit those lines in the elevation. This gives us points 1′-3′-5′-7′, etc., through which a line is drawn and gives us the pattern for the oblong end piece. But for the middle piece, true lengths must first be developed.

So we draw a base line, as A-B and pick the elevation line 1″-2″ and



Development of Patterns for Transitional Elbows for Ranges and Heaters Where Space Between Chimney and Collar Is Short.

set on this line as 2-1. From point 1 we erect a line equal to 1-1′ of "N." Then join 1 and 2 with a line and you have the true length. Next, pick line 2-2″-3″ from the elevation and from point 2 set over on line A-B. From this point erect a line equal to 3-3′ of "N", then 2-3 will be the true length. Pick 3″-4″ from the elevation, and using the point 3 in line A-B, mark the point 4 and erect a line equal to 4-4′ of "M". Then 3-4 will be the true length. Repeat this and pick line 4″-5″ from elevation and from point 4 on A-B and mark the point as 5 and erect a line equal to 5-5′ of "N", then 4-5 is the true length. Continue in this way, always picking those lines from elevation and setting them on the line A-D and erecting sectional lines to correspond, and the slant line will always give you the true length. Observe the line 5″-6″ in elevation raises up on a lower end equal to 5′-5 and on the upper end equal to 6′-6. Then line 6″-7″ raises up equal to line 6-6′ and 7-7′. This idea is carried out throughout the determining of true lengths and when finished they will appear as shown.

No specially developed sections are required through the miters of elevation, because we use the end patterns along the miter edge for a girth line. This saves us developing special sections in that, the middle gore piece "D" must join to the miter edge of the end gore pieces "A" and "C". Therefore, we pick the girth as 2′-4′-6′-8′, etc., from pattern "A" for the round end, and the spaces 1′-3′-5′-7′, etc., as girth spaces for the oblong end of pattern. So, draw a line as 1-1 in pattern "B" equal to twice the length of 1-1′ in "N". Then pick true lines 1-2 from diagram, and using points 1 and 1 as center, strike and cross arcs in point 2. Next pick the space 2′-4′ from "A", and using 2 as center, strike arc as at 4. Also pick space 1′-3′ from pattern "C", and using 1 in pattern as center, strike arc as at 3. Then pick true length 2-3 from diagram, and using 2 in pattern as center, cross arcs in point 3. Next pick true length3-4 from diagram, and using the new point 3 as center, cross arcs in point 4. Repeat this process by walking from one point to another and each time establishing a new point, until the points 14-13′ are established. After this draw lines through all points where arcs cross and you have the pattern for the middle piece of elbow. Laps should be allowed on all cross seams for seaming or riveting, otherwise a perfect fit is not liable to result.

Milwaukee Sheet Metal Men Take a Day Off for a Fine Sauer Braten Party in the Country.

More Than Fifty of Them Sat Down to Bounteous Repast and Then Worked Themselves Back Into Trim by Various Sports.

IF any one should ever tell me that running a sheet metal shop interferes with a man's appetite, I shall know that the truth is not in him, for if ever I saw a bunch of fellows eat as if it agreed with them, it was certainly the fifty and more sheet metal men from Milwaukee who were enjoying their sauerbraten and other "light" refreshments at their annual picnic in Knebel's Park, at Mequon, about fifteen miles out on the Green Bay road.

Paul Biersach took me out in his Grant sedan and Reinholdt Jeske brought me back to Milwaukee in his Ford coupe, so I was well taken care of, so far as transportation was concerned.

John Bogenberger, Senior and Junior, did the official photography stunt for me, so all I had to do was to eat and drink and be merry—and if nobody else had a good time I did, so the picnic was a grand success.

We arrived at Knebel's Park about 11 a. m. and found the entertainment committee on deck, with preparations well under way—some of them fully completed—for the entertainment of the physical man.

From a heap of canvas Henry Pluckhahn produced by some magic a brown foaming liquid which reminded us in some measure of the good old days before "the great drought."

Otto Geussenhainer and his son, Henry R., came over from Sheboygan, employing the services of William Gehrke, another of the progressive sheet metal contractors in that flourishing city, as chauffeur.

C. W. Pansch, "Griff" Jones and J. S. Yost were just in time to have their pictures snapped as representatives of the Racine bunch, before Louis Eschenburg rang the big dinner bell.

And let me tell you, that committee certainly had fixed up a spread that would have tempted any man to eat whether he was hungry or not: Sauerbraten, roast pork, rich gravy, apple sauce, sauerkraut (hot), pickled beets, sliced tomatoes, sliced cucumbers, potatoes, fresh rye bread, rich sweet butter, coffee, apple pie and cigars, the latter being distributed with the compliments of R. J. Schwab & Sons Company and the Pritzlaff Hardware Company.

After the inner man had been satisfied, Joe Hollitz called for remarks from a number of the visiting brethren, Otto Geussenhainer leading the list, others being Griff Jones, Pansch, Boelke of Pritzlaffs, and A. G. Pedersen, of AMERICAN ARTISAN.

John Bogenberger kept interrupting the speakers, so the toastmaster "penalized" him by introducing the "Chairman of the Fire Prevention Committee," and John had to get on his feet, although he had not finished his second helping of pie.

All of the speakers were instructed to keep withih the limit of two minutes and to avoid "shop talk," and with one or two exceptions they obeyed instructions, both as to time and subject, all expressing their pleasure in being present and felicitating the Milwaukee Association on having such a friendly spirit among its members.

The afternoon was spent in games of various sorts, quoits, baseball, squaw wrestling, barrel combats,

and other contests of skill and brawn; it was strange, however, to notice that no one had thought of bringing a deck of penochle cards along. At any rate, this famous game of wits was not included in the program.

1. They Were Feeling Fine. It Was Right After the Sauer Braten Feast. 2. Joe Hollitz and Jim Millen in a Barrel Joust. 3. The Same Getting Ready for a Wrestling Match. 4. The Pritzlaff Everkeen Quartette, Boelke, Wollaeger, Kiliam and Eggert. 5. The Tonnsens, Senior and Junior. 6. The Feed Committee, R. Jeske, Louis Eschenburg and Bill Hammann. 7. The Sheboygan Guests, William Gehrke, Otto and H. R. Geussenhainer. 8. John Bogenberger, Senior and Junior. 9. A. G. Pedersen Greeting Paul Biersach. 10. John Bogenberger Snapping His Son and Heir.

Up to the time when we were waiting for the command to "fall in for the eats," the only Chicago visitor was A. G. Pedersen, editor of AMERICAN ARTISAN, but just as we were seated, in breezed Ed Hoffmann with Dave Haines' son and heir and his associate in the ventilating business, Mr. Ernest V. Lippe, who by the way has worked out a very convenient set of tables of weights of galvanized and black iron ducts, particulars about which will be published in the next issue of AMERICAN ARTISAN.

Joe Hollitz is surely versatile. Not only does he sell a lot or furnaces, but he climbs trees with the agility of a cat and he has the art of squaw wrestling down pat, although D. D. Green, who by the way is past sixty years of age and considerably smaller in size, threw Joe once, something which nobody else could do.

In order that everybody may know to whom the chief credit is due for the fine time, we cite the names of the three members of the entertainment committee: R. Jeske, William Hammann and Louis Eschenburg. Louis was put on the committee to add weight, but he surely added something else, too. If it had not been for his swinging of the bell, we might have been late for dinner.

The well known basso, John Bogenberger, Sr., had his quartette in good trim and among others, they regaled us with the famous "Yellow Garter" song.

Paul Biersach is old enough to be a grandfather, but he was as agile as a ten-year-old boy, and proved himself a good fielder and batter during the ball game.

Madson, the Wheeling Corrugating Company's newest married man, pounded out so many extra base hits that the scorers quit on the job. Every time he came to bat the bases were cleared.

"Pom," the GiltEdge furnace star, was on deck, as was Wherry of the Follansbee tribe, both with a big stock of stories.

Here Are Some Things That It Is Difficult to Do for Most People.

To apologize.
To begin over.
To take advice.
To admit error.
To be unselfish.
To face a sneer.
To be charitable.
To be considerate.
To avoid mistakes.
To endure success.
To keep on trying.
To forgive and forget.
To profit by mistakes.
To think and then act.

Frank B. Higgins, Well-Beloved Friend of Thousands of Sheet Metal Men, Has Gone.

Death Relieved His Sufferings on Sunday Noon, August Twelfth.

IT is with profound regret that we announce the death of Frank B. Higgins, on Sunday, August 12th, at his home in St. Louis.

The writer has known Frank for many years, and all the time has regarded him as one of the men who bring credit to their trade or profession. He was a man of high principles and lovable character, always glad to do more than his share toward making conditions better for his craft.

Frank B. Higgins.

Frank was a true friend and counted among his friends thousands of sheet metal men, from the Atlantic to the Pacific and from the Soo to El Paso—men who had learned to know and love him at the national conventions. In his home city of St. Louis there was probably no other sheet metal contractor more liked and respected than Frank B. Higgins.

Born April 19, 1869 in St. Louis and being of a family of sheet metal men, Frank naturally chose that business as his field and made a success, having operated a general sheet metal contracting shop under his own name since 1906.

He was prominent in Association affairs, and served the St. Louis organization as Secretary, Vice-President and President. For many years he filled the office of First Vice-President of the National Association of Sheet Metal Contractors, refusing re-election at the recent convention in St. Louis, at which time he was chairman of the entertainment committee, in which capacity he had much to do with the unqualified success of the convention.

As Julius Gerock says in his letter to AMERICAN ARTISAN announcing the death of this good man:

"He will be missed by his many friends."

Objections and excuses are the only reasons why salesmen have jobs. If there were no such difficuties, the salesman would have no job.

Tin Plate Makers Meet to Consider Gauge and Quality of Material for Canners' Use.

Representatives of leading tin plate makers, can makers and canners met at the Bureau of Standards in Washington, D. C., August 15th to consider the establishment of standards governing the gauge and quality of tin plate in canners' cans.

The Bureau called the meeting at the instance of the National Canners' Association. Heretofore there has been practically no inspection of cans by the canners because of inadequate facilities. Imperfections have caused some marked losses, the canners assert, hence their efforts to assure themselves of the quality of their tin plate and cans at the source. The canners also are proposing the sale of waster tin plate be stopped.

Among the steel and tin plate interests invited to attend the conference are the American Sheet & Tin Plate Company, Wierton Steel Company, Falcon Steel Company, Trumbull Steel Company, Jones & Laughlin Steel Company, Bethlehem Steel Company, American Steel Company, McKeesport Tin Plate Company, Washington Tin Plate Company, Wheeling Steel Company, N. & G. Taylor Company, and the National Stamping & Enameling Company.

Hollinshead N. Taylor Returns from Trip to Welsh Tin Plate District and Other British Points.

Hollinshead N. Taylor, President of N. S. G. Taylor Company, Philadelphia, has just returned from Europe where among other sections he motored through the Welsh Tin Plate district and the beautiful estates in Southwestern England.

"H. N." knows a lot about the making of good tin plate, and no doubt he took time to post himself on the latest methods of the old time Welsh tin plate makers, so that they won't be able to claim anything on "Target and Arrow" and get away with it.

The Steam That Is Used in Blowing the Noonday Whistle Does Nothing Towards Turning the Wheels of Industry.

Don't Be a Kicker! You Need All the "Steam" You Can Get to Improve Business by Helping Your Competitor, Says Greenberg.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by J. C. Greenberg, Cleveland, Ohio.

I CALLED on Jim Kicker one morning and we had a merry time. You know Jim Kicker as well as I do, so I need not describe him to you. Jim would not talk business. You see, my business is to get orders, and that is what I like to talk about. My sales manager does not appreciate anything but orders. He is queer that way. At any rate, Jim switched the conversation to local affairs. He started in with the old, rusty, wornout phrase: "The trouble is—" and then he let her go something like this:

"The trouble is in this town that not one of the shops have any idea about business. They are as ignorant as kids when it comes to business. Talk about cutting prices—it's a shame. They simply take work for nothing. Why, last week the job on the new hotel was let—"

"Hold on, Jim," I interrupted. "Before you go any further, I have heard this story four times this morning and I'm sick of it."

"Just let me tell you the things that the other fellows did not tell you," insisted Jim. "You see, I'm really the only man in this town who gets a fair price for his work, and I'm known as the highest-priced man in this town. I am doing all I can to hold the price where it should be, but the other fellows just rip things up so bad that business is on the 'bum.'"

"Well, Jim," said I, "you did not tell me a single thing that is new. The other four fellows told me the same thing about being the highest-priced man and all that, also that business is on the 'bum.' The question is: What are you fellows doing to ease the condition and get back to common sense?"

"Oh rats!" exclaimed Jim. "When you talk about common sense, there is nothing doing at all. There is not an ounce of common sense in all the shops in this town."

"Jim, do you include yourself in this statement?" I asked in a sort of easy manner.

"No, I do not," asserted Jim. "I have common sense all right enough, but when competition does not let me use it, what good is it? Just look; here we have sixteen shops in this town and not a single one of them is making real money. They are all losing their hides and cannot see it. What can I do?"

"Jim," said I, "you can do a whole lot if you want to. You have a good business and you are what I should call a good business man. Yet you growl, kick and fuss, and lean back on the old crutch: 'That there is no use in trying.'"

"Oh, I have tried hard in the past, but I am off of it now," declared Jim. "I have spent lots of time in criticism and worry, but it just naturally rolls off their backs like water from a duck."

Just at this moment the steam whistle in the brick plant across the way blew a loud blast. It was dinner time, and the men have to eat, you know. Something seemed to pop into my head when the whistle blew that reminded me of Jim. You know when a fellow suddenly gets an idea he must let it out or bust. Well, I did not want to bust, so I said to Jim: "Jim, did you hear that whistle blow?"

"I sure did," admitted Jim. "And I am as hungry as a bear. Come on, let's eat. We will talk business after lunch."

You see, I really wanted to dig into Jim, but since he said, "let's eat," it would have been ungrateful of me to rub it into him just at that moment. I thought that as long as Jim wanted to pay for the lunch, I may as well let him do it. So we went to eat.

On our return to the shop we sat down and lit cigars. I still, however, had that idea that struck me when the whistle blew. I was determined to get it out. And I did.

"Jim," said I, "when I called your attention to the whistle before lunch, I did not mean to throw a hint that you should buy the lunch. I wanted to say something else to you at that time, but—"

"Oh, that's all right, old man," interrupted Jim, with good cheer. "I like you well enough to have you as a guest. We have done this many times and you have paid for the lunch most of the time. What was the idea that you wanted to spring?"

"Here it is, Jim," said I, slowly. "You were talking about business being profitless, and unreliable competition was ruining the possible outlook, and all that, when that whistle blew across the street and you toted me off to lunch. I was just thinking as I heard the whistle blow that it illustrated the condition in this town exactly."

"How is that?" asked Jim in surprise. "That whistle reminded you of the condition in this town—what are you driving at, anyway?"

"I am driving at this, Jim," I replied. "The steam that blew through that whistle did not make the wheels go round."

Jim laughed out loud. It tickled his sense of humor. "Say that again, will you?" he pleaded.

"The steam that blows through the whistle does not make the wheels go round," I repeated, slowly.

"Well," asked Jim, "what has that to do with the condition in this town, anyway?"

"It has this much to do with it, Jim," I replied. "You and the rest of the shops are merely criticizing each other and blowing off a lot of steam uselessly. You all make a loud noise, but you do not make the wheels of business go round. What is the use of kicking and cussing

and criticizing without action? All that which you do is nothing but steam that makes a noise and does not really mean anything. Why don't you, as a business man who loves his industry, *do something?*"

"What can I do? I am all alone in this," protested Jim.

"You can teach them," I insisted. "You can enlighten them, you can mingle with them and be a real fellow. Instead, all you do is criticize and make matters worse."

"It's no use," said Jim, with finality.

"That is just it," said I. "You are blowing steam that does no good. These little business men need your help because you can give it, but you don't. Call a meeting in your shop some night and ask them to come up and learn how to figure a job. Then call another meeting and teach them overhead. Remember, please, that as long as they remain as they are, just that long will you, and all of you suffer this dreaded disease in business called 'ignorance.' If the disease is here and you will make no effort to cure it, then you deserve just what you are getting, and should not complain. To cure wrong methods you must reach their brain with better ideas. If you don't do this, you are a poor stick yourself, because you will not elevate your industry. All of your criticism and scolding is only steam that blows through your whistle, but does not make the wheels go round. It is noise that is bad and worse than useless. Better think this thing over and stop up your whistle. You need all the steam you can get to improve business by helping your competitor."

There are many Kickers in this world who only see the faults in others, but do not see the flaws in themselves. If you are a Kicker, stop kicking and become an active business man. Remember that the steam that goes through your whistle does not make the wheels of industry go round.

Before you can be 100 per cent efficient, you must be 100 per cent loyal; both go hand in hand.

Retrospection by Old-Time Tinner; the Tinner's Dream.

L. S. Bonbrake, Peoria, Illinois, does not generally have time for reminiscences, but in the following he has drawn back the portals of time and has given us a passing glimpse of the life of a tinsmith of other years:

It has never been all skittles and beer with the sheet metal worker. Everything considered, I surely believe the old journeyman tinner, when he was a superior workman, had it spread all over the modern sheet metal worker.

We started in at tinsmithing when candle molds and tin lanterns were yet on the shelves. My boss was a "live wire"; he would get up at break of day, dress and rush downtown as if a house was on fire, until he reached "Jake's Place," when he'd turn in for his morning's nip and gauge the quantity by the number of cronies in the place. Then hurry on to the store, look in to see if I was sweeping out, then hurry back home for breakfast with the vital part of the day's proceedings completed.

The hardest small thing I had to learn was to double seam a neat, smooth bottom on a nine-inch pie pan. We made them by the gross in the early days. The boss told me I could keep the first one-half dozen I made. They would not stay in one place.

Jake's Place was on the left hand side of the street, at the foot of a slight hill or elevation. Across the street from Jake was an old-time custom flouring mill, owned by Bill Scott. On top of the hill was a United Brethren church, one of whose prominent members declared himself as being sanctified. The "boss," Jack Cross, was getting his usual nip one morning when Jake spoke to him, mad like. "Shack, I vant you to make it me a horn like dose sound from Gabriel, as near as you can, you know."

"What do you want a horn like that for, Jake?" asked Mr. Cross.

"Vell, you see dot crucified Shon Miller, up at der United Rifle Company church, you know. He make a compair at their reviful last night. He say that der people, when they go down town from this church, some take der right han' side that leads to Scott's mill, dot vas Heafin. An' some take der left han' side vot leads to Jake Grunder's, dot vas Hell. He say dot apout mein saloon. I vant to got a big horn, an' crawl up off der ceiling an' ven da vas singin' an' shoutin' I vill blow mein horn like Hell, you know; an' it vas they all run like scared sheep wen they think Gabriel vas come, you know. I got mein revenge."

I was learning the trade by sweeping out the store, making tin cup handles from scrap tin, tending to the horse and on busy days waiting on customers. I was given the first tin lantern I made. Gee! but I was proud of it. Polished it up black and shiny with a thick coat of tar paint, which was used for painting tin roofs.

Several evenings later when it had dried hard (on the surface) I mustered up enough courage to take it to a "Literary" in the school house, and I was gonna take Mary home that night, or die in the attempt. Stationed at the door after the exercises were over, my heart going fliperty-flap (palpitation) and my Adam's apple tearing up and down my neck like a piston rod, the lantern and I waited for the girl. I have always thought the lantern did the business.

As Mary tucked her slim hand under my stalwart, protective arm, as Laura Jean Libby or someone was wont to say—but Jiminy Cripes; when lit, that lantern would give no light; the beautiful, shiny tar paint covered all the holes made with chisel and punch. I made a few holes with a quarter inch hollow punch on the top and the lantern then threw a little light ahead. When the door was opened, the candle would blow out. Mary asked me if I had a dead rat in my pocket, and the lantern and I were forsaken, and another destiny changed, all on account of tar paint.

With the advent of pressed and commercial tinware, the prosperous "all the year round" times for the tin shop commenced to disappear. No longer could the tinner depend upon two months or more work in making fruit cans, then jump right into stove pipe and elbows for a like period and finish up the winter after Christmas with an assortment of shelf ware, including wash boilers, buckets, coffee pots, in short, everything used in the kitchen and many outside of it. The tendency in most localities was to shift from work of the usual character of years gone by to newer features.

We adopted warm air heating and gave slate and tin roofing more attention, to provide work for our men eight and nine months in the year. Then we went after novelties that would sell in our district through the year, that could be made in slack time during the winter. Such articles as fruit evaporators, lawn and cemetery vases, water-cooling tanks for milk cans. When the disposition is there, environment need not of a necessity keep one down. In the past one or two decades we have found an earnest effort will keep the sheet metal worker busy all the year long. Furnace work, roofing in its various forms, automobile repair jobs, and the numerous offshoots of the business when looked after.

If you want business, you must let your community know it. Simply opening the front door of the store in the morning is not enough. You have got to hustle for trade—go after it until your neighborhood is fully aware of the fact, and it must be a fact, that you can make a price and do any character of sheet metal work, roofing and job work thoroughly, with complete satisfaction to your patrons in quality, neatness and appearance. We did not have the field, or diversity of products, prior to the middle of the nineteenth century, you have now. We did have, however, tinware of every description to make, and at times when laying sprawled on my back with head shoved into the ash pit of a furnace, trying to crack a rusted nut, to get in a new grate bar, with ashes sifting into my eyes at every lick on the chisel, I long for the old-fashioned winters, with snow on the ground from December to March, a continual jingle of attuned sleigh bells on the street and a warm, clean tin shop (did you ever see one?), and a store room to fill to the ceiling with shiny, bright tinware, the dream of the old-time tinner.

Detroit Sheet Metal Men Will Have "Old Time Party" Next Tuesday, August 21st.

The next regular meeting of the Detroit Sheet Metal & Roofing Contractors' Association will take the form of an "Old Time Party"—you know, as Al Berschbach says in his invitation to Ye Scribe.

The party will begin at 1 p. m. on Tuesday, August 21st, with an especially fine dinner at 5 p. m. The place of the party is a secret at this writing, but by phoning Bill Busch, Al Berschbach or Tom Basman, the necessary directions will be obtained, so as to get to the gathering.

There will be all sorts of games, including baseball and barnyard golf, and valuable prizes will be given to the winners.

Reservations must be mailed, with check, to the Michigan Cornice & Slate Works, 639 East Fort Street.

Non-members are especially invited.

This Is Not the Right Way to Stimulate Business.

Out in a Western city a group of retail merchants assembled and took counsel over the state of business and found that it was good. Then they denounced those who would do anything tending to create lack of confidence in the future of trade, and resolved that they would go back home and inaugurate a "buy now" campaign. All of this is well enough in its way. There is no excuse for pessimism, and the country is not headed for a period of hard times. The question is raised, however, as to the psychological effect of the proposed campaign. To shout "Buy Now!" is a very effective way to advertise the fact that people are not buying. Aren't these well-meaning merchants defeating their own object, when they inaugurate such a program? There is no reason to find fault with consumer buying this year. Some lines have been affected adversely by unfavorable weather conditions, but nothing like a buyers' strike has been in evidence or is deemed likely to develop.

AMERICAN ARTISAN Brings Replies from Oregon to Ohio and from Michigan to Texas.

To AMERICAN ARTISAN:

We wish to thank you for the excellent result obtained from our advertisement. We received applications from Oregon to Ohio and from Michigan to Texas.

Morrison Plumbing & Sheet Metal Company.

By J. C. KINTNER.

Poplar Bluffs, Missouri, August 9, 1923.

Notes and Queries

Mueller Warm Air Furnace.

From R. H. Vandevelde and Company, 113 Market Street, Dyersburg, Tennessee.

Kindly advise us the name and address of the manufacturers of the Mueller Furnace.

Ans.—L. J. Mueller Furnace Company, Milwaukee, Wisconsin.

Horan Stay Hanger.

From J. H. Barnett Sheet Metal Works, Dodge City, Kansas.

Who manufactures the Horan Stay Hanger?

Ans.—Horan Stay Hanger Company, 1932H West Jefferson, Louisville, Kentucky.

Campbell Heating Company.

From St. Ansgar Tinshop, St. Ansgar, Iowa.

Kindly give us the address of the Campbell Heating Company.

Ans.—Campbell Heating Company, Des Moines, Iowa.

Repairs for Acme Hummer Furnace.

From Moeller Furnace Company, 114 So. 12th Street, Fort Dodge, Iowa.

Where can we get repairs for the Acme Hummer Furnace.

Ans.—Northwestern Stove Repair Company, 662 West Roosevelt Road, Chicago, Illinois.

Q-u-a-c-k! Q-u-a-c-k! Q-u-a-c-k! B-a-n-g!

If Your Aim Was Good, No Need to Worry About Those Ducks for Thanksgiving.

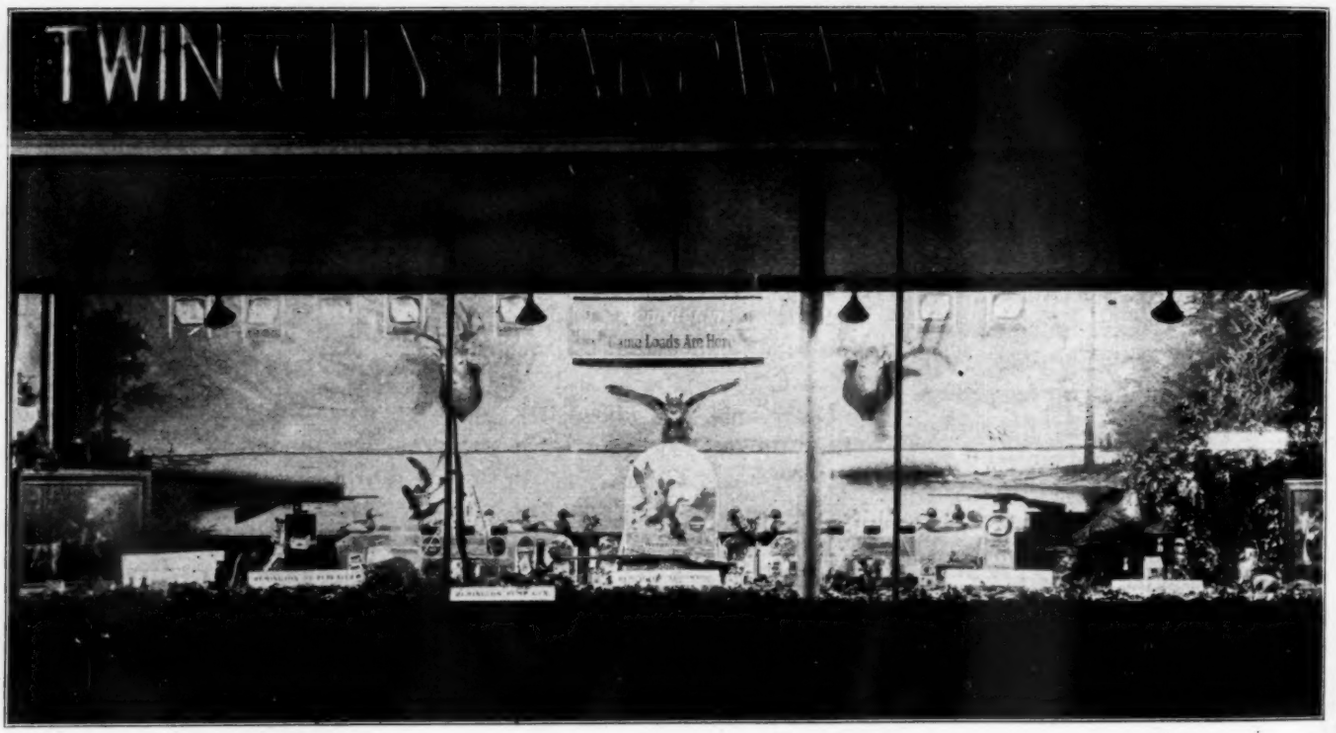
Window Display Arranged by E. A. Sauer, 2627 Park Avenue, Minneapolis, Minnesota, Which Is Indeed a Highly Concentrated Form of Display.

THE attention value of any window display depends a great deal upon the intensity of feeling aroused in the mind of the person to whom the appeal is being made.

In the case of a window display, the designer always has some one class of customers in mind when arranging the display. Of course, we all know that the wider he can stretch the appeal, the more people he is going to impress. In the main, however, he picks out one class and then concentrates his entire attention to making the display chiefly to attract those persons whom he has reason to believe would be favorably impressed and who are in a position to put their mental decisions into immediate action.

In the accompanying window display, arranged by E. A. Sauer, 2627 Park Avenue, Minneapolis, Minnesota, there is absolutely nothing that would attract a person not primarily interested in the approach of the fall duck season. On the other hand, to the hunter and trapper nothing could be more interesting. This window display will force itself upon the experienced hunter in spite of himself, as everything in it tends to associate itself with some former experience which the hunter has had and makes him live again amidst the excitement and thrill of that former experience. This, then, calls out the mental picture of his own hunting outfit stored away in the garret. The entire scene of his having stored it away last fall comes before him and he makes a mental resolution to get out the old outfit, look it over and make such additions as he may wish —perhaps he may decide to purchase an entire new outfit when he sees the condition of his old one. This illustration is certainly well arranged.

It would be well to post yourself on the game and fish laws of your state or community, because you're going to need this information.



E. A. Sauer, 2627 Park Avenue, Minneapolis, Minnesota, Knows a Thing or Two About Sportsmen and What These High-Strung Fellows Like to See in Window Displays.

Chicago Bureau of Conventions Working Overtime to Boost City.

The Bureau of Conventions of the Chicago Association of Commerce is constantly at work taking care of visitors to Chicago.

The purpose of the Bureau is to assure visitors to the city comfortable rooms during their stay. If you can't find a room when in Chicago, call Main 4808 and you will be properly taken care of.

C. H. Casey Is New Secretary of Minnesota and South Dakota Retail Hardware Associations.

They know a good man when they see him—up in Minnesota—and that is one reason why C. H. Casey, who filled the office of President of the National Retail Hardware Association so well during the term which ended in June, is now the Secretary of the Minnesota Retail Hardware Association, as well as of the South Dakota body, having been chosen to fill out the unexpired term of H. O. Roberts.

Both associations have prospered under Mr. Roberts' efficient management, and there is every reason to believe that Mr. Casey will keep up the pace.

Here is an open letter from him to the members of the two state associations which he is to serve, which contains a lot of good, hard sense, so we are glad to give it further publicity:

C. H. Casey's Letter.

"To the hardware merchants of Minnesota and South Dakota and of the Northwest, I wish to extend greetings and say that I am on the job your respective executive boards elected me to fill, which is manager of the Minnesota and South Dakota Retail Hardware Associations.

"Just why they picked me for the post over better men available is still more or less of a conundrum to me. Perhaps it is because of the troublous times in agriculture, and as a consequence in commerce, that I was selected to succeed Mr. Roberts, whose resignation was handed in some time ago; perhaps my thirty years of work in an average hardware store in an average town such as the average merchant owns and operates was a consideration with those gentlemen in making their choice of a new manager.

"Perhaps I can appreciate your problems and the conditions under which you are now operating better than a man lacking this kind of experience that was gathered by hard knocks. I am not able to write you an 'ever-ready' recipe to cure your commercial ills, for the reputed wise men of the country, the ones sitting in the watch towers of commercial centers and big business, are apparently no better able to prophesy than I am. It seems no one, at least no one that has a reputation to maintain, will hazard more than a mere opinion as to what is likely to happen or is the right thing to do.

"The best advice I can give to hardware merchants, which I give honestly and without ulterior motives, is the same that I have been giving to my farmer friends and customers in my home town for some months past. *Stick to the job you are now in,* if it is humanly possible for you.

C. H. Casey.

"The present conditions are not going to continue indefinitely; agriculture is going to come back, and in my humble opinion it is not going to be so very long until betterment will be noticeable. When it does come back the farmer who has hung on, held his equipment together, kept the fertility of the soil up to normal, is going to be in position to take a profitable advantage of the upward swing of the pendulum of prices; while the ones who have thrown up their hands, exclaiming 'What is the use?'—perhaps moved into town to get the fabulous wages that they read about and did not materialize—will be wishing they were back on the land.

"There is no better simile I can think of than this to apply to the merchandising business. When the farmer is again prosperous, business will be good, but if in the meantime you have not kept your organization together, held the business and the friendship, as well as the loyalty of your customers, kept at least a *reasonable stock* of goods by careful, economical management and good judgment, you will be out of the game, and it will be hard, discouraging work to get back in again. True, during this period you will have to *work hard,* and take small profits, but that is what the farmer is doing.

"You know it really is not very hard to get out of a business, but to get back again and get going takes a long time and is accompanied by many chances. You may think there is no business to be had, but you will find differently if you will *go out and hustle for it.* You may say there is no money in the country, but recent published reports show that the large mail order houses have had a wonderful increase in their business for the month of July and they get most of their business from the rural districts, and they get CASH.

"Now is a good time to *spend some extra money on advertising.* Do not let the foreign concerns get away with their implied, if not actual, statements that you cannot compete with them. Go after them hammer and tongs and let your people know by constant, truthful advertising and personal visits just where you stand. 'Blood will tell,' and constant, well-directed, intelligent work, even in these times of agricultural depression, will bring you some real surprises. I know whereof I speak from quite recent personal experience."

Pennsylvania Railroad Will Run Hardware Special to Conventions in Atlantic City in October.

Since Tom Usher, Bob Jones and Ned Swift "graduated" from the Hardware Special, T. R. (Tom) Wilt has successfully engineered the Hardware Special to the Atlantic City convention of the American Hardware Manufacturers' and

the National Hardware Associations for the Pennsylvania Railroad.

Preliminary arrangements have been started by Mr. Wilt, and full details will be published within a short time. Mr. Wilt can be reached in care of the Pennsylvania Railroad, Room 504, 323 South Wells Street, Chicago, and undoubtedly will be glad to have expressions as to the best time of day for the train to leave Chicago, as well as with regard to other details.

C. S Hubbard, Long Prominent in Hardware Manufacturers' Association, Passes On.

Another of the old timers in the American Hardware Manufacturers' Association has passed on.

Charles S. Hubbard, for many years resident manager of the Ames Shovel & Tool Company, was found dead a few days ago in his room at the Duquesne Club, Pittsburgh.

Born in Minneapolis 67 years ago, Mr. Hubbard came to Pittsburgh while still a small child and had made his home there ever since.

He was honored by his fellow citizens by being chosen as director of the Department of Public Safety and also as city treasurer, having served four years in each office—from 1914 to 1922. For two years he was also president of the Duquesne Club.

A Few Handy Bolts for the Hour of Need.

The New York State College of Agriculture at Cornell, Department of Rural Engineering, through Professor H. W. Riley, head of that department, has presented to the farmers of the state a brand new assortment of bolts for general repair work, the sizes and numbers of each being based on a complete study of farm machinery used in New York state.

Professor Riley asks that we bring the subject to the attention of our subscribers because there will undoubtedly be inquiry for this assortment right along, if indeed retail hardware dealers have not already heard from it.

The schedule follows:

New York Farm Bolt Assortment:

Machine bolts with standard or with lock nuts. With assortment of plain washers listed below included.

Size	Threads per inch	Length	Quan.
¼	20	1½	5
		2	5
		3	5
		4	5
5/16	18	1½	5
		2	5
		3	5
		4	5
⅜	16	1½	10
		2	5
		2½	6
		3½	6
		4½	5
7/16	14	1½	3
		2½	3
		3½	4
		4½	2
		6	2
½	13	1½	3
		2½	3
		3½	4
		4½	2
		6	2

Plain Washer Assortment.

To be included with the farm bolt assortment given above.

Size	3/16	¼	5/16	⅜	7/16	½
Weight (ozs.)	1	4	8	16	8	16
Approx. No.	25	40	35	70	25	25

Extra Standard Threaded Nut Assortment.

Size	¼	5/16	⅜	7/16	½	⅝
Weight (ozs.)	2	2	10	4	6	10
Approx. No.	8	5	15	5	5	5
Thread per inch	20	18	16	14	13	11

Extra Lock Washer Assortment.

Size	3/16	¼	5/16	⅜	7/16	½	⅝
No.	5	5	5	15	5	5	5

Extra Lock Nut Assortment.

Size	¼	5/16	⅜	7/16	½	⅝
No.	5	5	15	5	5	5
Thread per inch	20	18	16	14	13	11

Tools especially useful with bolts:

6-inch slip joint pliers.

8-inch adjustable S wrench.

Pistol grip, adjustable back hack saw frame.

1 dozen 10-inch hack saw blades.

It Is Against the Law to Mark Fictitious Values on Goods.

In accordance with a recent legal decision, it is not permissible to mark a price of $2.00 on an article that is intended to be sold at $1.00 that is, an article which is sold to the dealer at $6.00 a dozen or 50 cents each, and intended to be sold by him at $1.00 each, may not be marked $2.00 in order to give the purchaser the impression that he is getting a bargain.

The question came up in connection with certain razor hones sold to supply houses at 75 cents each and retailing at $1.50, which was marked $3.00 by the manufacturers. It was shown that there was no intent on the part of either manufacturer or retailer to sell the hone at this price.

They Do Not Expect Everybody to Buy from Them, Still They Continue to Advertise.

The Chandler & Farquhar Company, progressive hardware merchants of Boston, look at advertising in this way:

We don't expect all the people who pass our windows to buy goods from us. Nor do we expect all the readers of Chan-Farco *Beacon* to buy goods from us. Nor do we expect all callers at the store to buy goods from us. Yet we haven't quit displaying goods in our show windows, we haven't quit sending the Chan-Farco *Beacon*, nor have we quit being glad to receive store callers.

We want more window viewers, more Chan-Farco *Beacon* readers, more store callers, and more customers. Our service maintained at an intelligent standard is our offering.

Let Prospect Handle Articles Say Successful Salesmen.

Successful salesmen have found it decidedly resultful to have the prospective customer handle the merchandise they are endeavoring to sell him—if this is possible.

A prospect for a saw, hammer or monkey wrench, for example, is much more easily persuaded to buy, once he takes the article into his hands and begins testing it out.

Direct-mail advertisers are using the same principle effectively in letters, by asking the reader to perform some *subordinate action.*

"Look out of your window now, Mr. Jones. Notice the harsh effect

that unpainted buildings have upon you," says one paint manufacturer in his letter. It is something the reader finds easy to do, and having complied with this minor suggestion, is much more amenable to the larger one that brings in the business.

"Feel the snap and crackle of this letterhead you are now holding," says a paper maker, in his letter. "Notice its clean-cut appearance. See how it takes the ink." The reader finds this quite easy to do—no effort at all—*and* having once *coöperated* with the paper maker, he feels more open to the suggestion to send for a trial order.

Finds Aluminum Paint Reduces Radiator Efficiency.

The aluminum or bronze paint generally applied to radiators greatly reduces their effectiveness and makes it necessary to have a larger surface for the same heating effect, according to experiments performed by Dr. W. W. Coblentz, of the Bureau of Standards. Dr. Coblentz finds that the heat radiated from an alluminum painted radiator surface is less than a third of that emitted by a radiator of the same size painted with a non-metallic paint, enameled, or simply allowed to rust.

On the other hand he finds that aluminum paint is an effective means of reducing the amount of heat transmitted through a thin material. Applied to the under side of a tent or awning it reduces by three-fourths the amount of heat from the sun which gets through the cloth, while if used on the cover of an automobile or ice wagon it cuts in half the heat let through and makes the temperature inside the vehicle more nearly that found in natural shade, thereby making it much more comfortable.

Creating Business When Sales in the Store Are Slow.

Some hardware dealers who carry cordage and binder twine in stock find it exceedingly profitable to take a load of twine in the "flivver" and drive into the country, calling on the farmers. The farmer will appreciate this service and the trips can be made by one or two clerks in the afternoon when business in the store is not very active. Little things like this are what tend to make the net sales increase and cut down the overhead.

In this way, too, the clerk can get first hand information regarding the farmer's needs and he could, perhaps, offer suggestions that would open the way to future sales. It gives your store the prestige of being up on its toes and alive to do business.

The United States Department of the Interior announces that during 1922 there were 3,621,304 pounds of copper, 22,147,400 pounds of lead and 22,954,000 pounds of zinc produced in Colorado. There is a slight decrease in the copper production in that state from 1921. Lead production ran a little ahead of 1921, while zinc production in 1922 was increased over the production in 1921 by almost 20,000,000 pounds.

Coming Conventions

Joint Committee on Standardization of Registers will meet at Waldorf-Astoria Hotel, New York City, Tuesday, September 4. Chairman, R. W. Menk, Excelsior Steel Furnace Company, Chicago.

Automobile Accessories Branch National Hardware Association, Hotel Shelburne, Atlantic City, New Jersey, October 15 to 19.

The National Hardware Association and the American Hardware Manufacturers' Association, Atlantic City, New Jersey, October 16, 17, 18 and 19. F. D. Mitchell, 1819 Broadway, New York, is Secretary and Treasurer of the Manufacturers; T. J. Fernley, Secretary of Jobbers.

The twenty-fourth annual convention of the National Federation of Implement Dealers' Associations will be held at Hotel Sherman, Chicago, October 17, 18 and 19, 1923. H. J. Hodge, Abilene, Kansas, is Secretary.

Mountain States Hardware and Implement Association Convention, City Auditorium, Denver, Colorado, January, 1924. W. W. McAlister, Secretary-Treasurer, Boulder, Colorado.

Western Retail Implement and Hardware Association, Missouri Theater Building, Kansas City, January 15, 16, 17, 1924. H. J. Hodge, Secretary-Treasurer, Abilene, Kansas.

The West Virginia Retail Hardware Association, Convention and Exhibit, Huntington, West Virginia, January 15 to 18, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Kentucky Hardware and Implement Association, Louisville, January 24-25, 1924. J. M. Stone, Secretary-Treasurer, 202 Republic Building, Louisville.

Indiana Retail Hardware Association, Inc., Convention and Exhibition, Cadle Tabernacle, January 29, 30, 31, February 1, 1924. G. F. Sheely, Secretary, Argos.

Nebraska Retail Hardware Association, Lincoln, Nebraska, February 5 to 8, 1924. George H. Dietz, Lincoln, Nebraska, Secretary-Treasurer.

Wisconsin Retail Hardware Association Convention and Exhibition, Milwaukee Auditorium, February 6, 7, 8, 1924. George W. Kornely, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee. P. J. Jacobs, Secretary-Treasurer, Stevens Point.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 12, 13, 14, 1924. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

The Pennsylvania and Atlantic Seaboard Hardware Association, Incorporated, convention and exhibition at the Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14 and 15, 1924. Sharon E. Jones, Secretary-Treasurer, Wesley Building, Philadelphia.

New York Retail Hardware Association Convention and Exhibition, February 19, 20, 21, 22, 1924. Headquarters, McAlpin Hotel, and Exhibition at Seventy-First Regiment Armory. John B. Foley, Secretary, 412-413 City Bank Building, Syracuse.

The Ohio Hardware Association, Convention and Exhibit, Cincinnati, Ohio, February 19 to 22, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Retail Hardware Doings

California.

Homer F. Larkin has purchased the interests of H. T. McClellan, associate owner, in the Orange Hardware Company, 120-22 South Classell Street, Orange.

Illinois.

A well equipped hardware store, known as the T. & G. hardware store, has been opened at 5400 Division, corner of Long, Austin.

Kansas.

The C. R. Blanton Hardware and Furniture store, Cimarron, has moved to the brick building in the next block south, formerly occupied by the Dunn Dry Goods Company.

Minneapolis.

William Stelton and Joseph Fick sold their hardware business in Litchfield to C. M. Wooley.

Missouri.

Paul St. Vrain has purchased an interest in the Gooch Hardware Company of Mexico.

Texas.

C. M. Williams has purchased the H. E. Chestnutt hardware store at Sixth and Polk Streets, Marillo.

Hardware Stores Can Sell More Gas Ranges Than They Do and Make Money on Them.

Note How George Bast and Sons Call Attention to Merits of Quick Meal Ranges.

THE accompanying illustration is a reproduction of an advertisement used by George Bast & Sons.

This copy is well worked out. It is designed primarily to bring people into the store. It, doubtless, produced good results.

The copy could have been improved slightly if an action verb had been introduced into the headline. This could have been worked out as follows: "Quick Meal Gas Ranges Show You How to Reduce Your Gas Bills."

This would have connected the two disjointed statements and put more meaning into them.

The explanation is well worded and free from grammatical errors.

The illustrations are good, as there is plenty of white space around them. Perhaps the ad would have been improved if a definite price had been stated, but as it is, that part of the transaction has been left for the salesman to take care of when the customer comes into the store.

Quick Meal Gas Ranges
HOW TO REDUCE YOUR GAS BILLS
Ordinarily what is to follow would be regarded as advertising matter but The Evening Journal believes in view of the increased price of gas that it will do a public duty in calling attention to the work of David Mencho of 934 Vine street. His phone number is 1261-X.
Many, in fact most persons using natural gas do not use it properly. Their stoves are not regulated in a proper way and as a result they are paying for a great deal more gas than is necessary.
David Mencho is a gas regulator and knows his business. Have him or some one equally competent regulate your gas stove and you will save a lot of money.
ONE WAY
The OTHER WAY
LORAIN
"Quick Meal" Gas Ranges with "Lorain" oven, heat regulator will save you many dollars in gas bills—They will do this because you bake and cook whole meals in the oven with one-half less gas—the gas going out entirely at times. The oven can not get any hotter than you want it to—avoiding baking failures and burned food. Cooks entire meals in the oven while you are miles away—using no more gas than it takes to cook one pot of potatoes on the top burner.
Have open tops and burners set high, utilizing every bit of heat from the burners—Zinc coated, non-rusting oven and broiler linings—Guaranteed white enameled splashers—Come in today and let us demonstrate this wonderful "Quick Meal" stove.
Geo. Bast & Sons
332-336 HIGH STREET

Cooking the Cook Through the Ages.

The modern housewife, who turns a gas-cock, lights the oven, puts in her roast, sets the thermostat to control the heat, and busies herself at some other task while the meat is cooking, knows little of the hardships of her foremothers, who for uncounted centuries could cook their food only by half-cooking themselves.

Cooking was primitive for centuries, however. The Island of Crete is the source of the earliest known cooking utensils, dating back to thousands of years before the Christian era.

The first great forward step in cookery with comfort can be credited to the Esquimaux and their stone seal-oil lamps, over which they cooked their food in soapstone kettles and for the first time localized the flame upon the object to be heated as it is done today.

From early Rome came sumptuous utensils of bronze and copper and silver-plate, but no help for the cook, who continued to simmer down through the ages.

Mediæval England, with her baronial splendors, was given to great feasts, but a fire in the middle of the earthen floor or a wide-mouthed fireplace was the only stove, and roasting, frying and boiling the only methods of preparing meat. Baking appears to have been the last development, and the primitive earth-oven first used still survives in many parts of the world.

The wood-burning stove, with its quick hot fire that turns the stove to red heat one moment and lets it cool the next, was followed by the coal stove.

Although there were a few isolated experiments with gas for cooking from the time gas was first used for lighting, more than one hundred years ago, it was less than thirty years ago that gas was used to any extent for fuel in the kitchen range. When women awoke to the value of gas for cooking in terms of efficiency and in comfort to themselves, the use of gas ranges spread rapidly. Today, in the United States alone, more than 7,000,000 gas stoves and other gas-cooking appliances are in use. Last year of the 340,000,000,000 cubic feet of manufactured gas used in this country, more than half of it was used for cooking, water heating and other domestic purposes, because it does not cook the cook.

Don't go through life meaning nothing in particular. Stand for something. Hitch your wagon to a star, and try to be somebody in particular, to be known for some one thing which you do superbly, something that you can be proud of. In whatever way you decide to get your living, resolve that you are going to be first-class; that you will not be a second-rater, an "also ran."

It Is the Business of an Advertisement to Bring Prospective Customers to the Store.

Simply Stating That You Have Certain Goods for Sale Will Not Bring Many; It Takes Real Reasons to Make Them Come.

In the accompanying illustration is shown an advertisement of the Green Bay Hardware Company reproduced from the Green Bay (Wisconsin) *Gazette*.

This advertisement has the right method of appeal; it is large enough to be seen; it carries with it an offer which never fails to produce results. This type of appeal is exceedingly popular and draws customers into the store.

As so often happens, however, the proofreader of the ad "slipped up" on the job, as he has omitted two words in the boldfaced type. The way it reads now, the wording does not make sense, although the meaning is not entirely obscured.

These practical demonstrations are popular and very much in vogue at the present time. People, especially the housewives, are always willing to drop in and see the new marvels being performed, and they are not easily fooled into believing a thing is good if it is not. These demonstrations give the housewife new food for thought which, of course, is what they were meant to do, and if the housewife is favorably impressed she can generally rearrange her household budget to include one of the new ideas.

The list of articles in the advertisement given free with the order for a stove is a generous offering, but it is doubtless like the hardware dealer who offered $1 per hundred for potatoes and found that the offer was the best piece of advertising he ever ran across.

It was evidently the intension of the company to have a factory expert do the demonstrating and thus receive the benefits to be derived by soliciting and accepting advertising assistance from the manufacturers of the range. The company has also tied up its newspaper advertising with its window displays, which is good policy. The introduction of that "Something New" idea has an appeal to the natural curiosity of a woman that is simply irresistible, and, doubtless, the advertisement brought good returns on the money invested.

A man who makes a habit, every deal he goes into, of asking himself, "What is there in it for the other fellow?" and who refuses to enter into any transaction where his own gain will mean disaster to some one else, cannot go far wrong. A clean profit is one that has also made a profit for the other fellow.

The GREEN BAY HARDWARE CO.

AT THE WEST END OF WALNUT ST. BRIDGE

PHONE 5080

Next Week You Will See Something New Way of Cooking Instructions. Watch For It

Beginning Monday and continuing every day next week, we will put on a Garland Cooking School of instruction in our store. Something new and very interesting, as one each of the following National Advertised articles given away free with the purchase of any Garland stove or furnace during this school of instruction.

1 bag of Flour, package of Sun Maid Raisins, package of Wheatena all wheat, package of Yeast Foam, package of Aunt Jemima Pan Cake Flour, package Beechnut Food, package of Swift's Seton Leaf Lard, package H. O. Oats, package Morton Salt, can of Log Cabin Syrup, can of C. & S. Coffee, can of Calumet Baking Powder, bottle of Dr. Price's Extract, box of Garland Stove Polish.

Watch for Our Big Add — Be Sure and See Our Windows

Something New.

Principal Interest in Metal Market Concerns Itself With Effect of Eight Hour Schedule.

General Opinion Is That Steel Prices Must Be Advanced As Result of Change. Other Metals Show Little Change.

INTRODUCTION this week of the short turn in many steel plants has made more definitely the elimination of the 12-hour day in the industry a direct and major market factor. Expectations of reduced and unsettled production, at least for the time being, and certainty of an increase in manufacturing costs attendant upon the inauguration of the new system, have been carefully weighed by both producers and consumers. The shorter work day in prospect, has been a material influence recently in stabilizing the steel market. In practical and general effect, it gives promise of proving an even stronger support to prices and buyers' confidence.

Nonferrous metal markets have been reflecting the unsatisfactory state of affairs abroad and the dullness of general business in this country. Having declined 25 per cent from the high point of the spring, zinc and lead prices have discounted much of the decline in demand and have been holding steady. Copper, however, being even more sensitive to affairs abroad, has been declining steadily the past week. Tin has been fairly strong, as American tinplate demand is being well maintained. Aluminum has been softer than at any time this year. Antimony has been firm.

Copper.

For the first time this year, the surplus stocks of refined copper in producers' hands increased in July, the increase amounting to nearly 15,000,000 pounds. This change in the statistical trend marks the completion of many of the old orders which consuming mills had on books and against which they had been covered with copper. New business in manufactured products has fallen off sharply and unfilled orders continue to decline. Mills are buying copper only as they need it to cover new orders. Last week brass and copper products' prices were reduced sharply, the reductions ranging from ¾ cent on brass to 1 cent on copper products. Wire was marked down only ¼ cent to 17 cents for bare copper wire. Electrolytic copper was held nominally at 14.25 cents, delivered, Monday, but could have been bought at close to 14.12½ cents. Casting copper dropped to 13.75 cents to 13.87½ cents. Lake went to 14.37½ cents, delivered.

Lead.

Lead has held fairly steady in a dull market, as producers have had little lead to sell and expect further consuming buying for August shipment. Business has been done in the Middle West recently on the basis of 6.40 cents to 6.45 cents, East St. Louis, and for eastern delivery on the basis of 6.62½ cents, New York. The leading interest has maintained its contract price of 6.50 cents, New York.

Tin.

Tin prices have fluctuated between 38.25 cents and 39 cents for spot Straits the past week, with futures held for practically the same price as spot. There was good consuming buying in New York on some days, with covering orders in London. Opposed to the American buying, however, has been the unfavorable political situation abroad which has restricted professional activity in the London market and caused a rather bearish feeling in the foreign tin market.

Zinc.

Zinc has advanced about 10 points on a moderate business. The firmness of ore prices at $36.00 to $37.50 in the Joplin field has contributed stability to the slab zinc market. Sales were made for prompt shipment Monday at 6.25 cents, East St. Louis. Brass mill special has been commanding 15 points premium; high grade has been selling at 8 cents to 8.50 cents, delivered. The July statistics of the American Zinc institute showed an increase in stocks of 4,067 tons last month, bringing the total stock as of July 31st to 21,240 tons, or about two weeks' supplies. Production and shipments were about the same as in the previous month.

Solder.

Chicago warehouse prices on solder are as follows: Warranted 50-50, $24.50; Commercial, 45-55, $22.75, and Plumbers', $21.00, all per 100 pounds.

Higher Prices Coming for Bolts, Nuts and Rivets.

Many of the larger manufacturers now are working on new lists of various kinds of nuts, bolts and rivets, advancing the price of many sizes to offset the increases in the standard list of bar extras made recently by steel manufacturers, it is reported. As far as can be learned, these new lists will become effective September first and will apply on all orders and contracts after that date. An important producer of nuts, bolts and rivets reports last week's business in all three commodities much heavier than for any week in the past two months. This probably is due to the fact consumers, hearing of a contemplated increase in the price, made haste to place business.

Wire and Nails.

What is thought to be the start of the fall demand for fence developed in Chicago during the week. Several rush orders for barbed wire have been entered and inquiry is much improved. Demand for nails and other wire products

is well sustained. Deliveries on nails still are almost 60 days behind. Fencing orders are practically caught up and prompt delivery can be made.

Tin Plate.

Tin plate makers have a good volume of specifications in hand and have no difficulty in lining up rolling schedules for the balance of this quarter. From all appearances considerable tonnage will be carried into October.

Plans are in the final stages of completion for the abolishment of the 12-hour shifts at the plants of the American Sheet & Tin Plate Company, and while comparatively few workmen are affected, yet the plan, involves shorter working hours for all cranemen, engineers and boiler tenders. Independent companies generally will follow the action of the Corporation in the way of 8-hour shifts at their plants and while the new arrangement will have little effect upon the cost of producing tin plate, yet an increased cost undoubtedly will be encountered in the rolling of bars.

Specifications continue of good volume and indications are there will be no letup in the volume of business to be placed for last quarter. Producers of tin plate continue to quote $5.50 per base box of 100 pounds, Pittsburgh.

Sheets.

The sentiment in the sheet market this week is decidedly improved. Consumers are endeavoring to learn what effect the 8-hour day will have on prices when books will be opened for next quarter, and to secure some expression in connection with a tentative shipping date. Prices are decidedly firm, as far as can be learned, at 3.00 cents for blue annealed, 3.85 cents for black, and 5.00 cents for galvanized, all Pittsburgh base. While the demand for black sheets has been irregular for several weeks past, independent producers generally have been reluctant to invite new business by quoting under the market, due principally to the close margin of profit. Some producers still have tonnage to deliver which was taken prior to the last market advance although the volume is fast disappearing. Blue annealed continues in good demand with makers strongly intrenched with orders. Renewed interest is displayed in high grade sheets, particularly for automobile parts. For the past month this class did not participate in the market to any large extent because of the change in car designs. Since the new models have been announced, an effort is being made to line up tonnage, great stress being laid upon early shipment. The price of 5.35 cents base Pittsburgh, for Number 22 full finished automobile sheets remains unchanged. Operation of sheet mills in this district is on the basis of 80 to 85 per cent of capacity.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $21.00 to $21.50; old iron axles, $27.00 to $27.50; steel springs, $22.00 to $22.50; No. 1 wrought iron, $15.50 to $16.00; No. 1 cast, $18.50 to $19.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9½ cents; light brass, 5 cents; lead, 4¼ cents; zinc, 3½ cents; and cast aluminum, 15 cents.

Pig Iron Market Shows Some Improvement Except in Southern Territory.

Inquiry is Beginning Io Manifest Itself and Prices Show Greater Firmness.

EFFORTS of the past few weeks on the part of a comparatively few buyers in the Pittsburgh market to dislodge the price of $25.00, valley, on strictly standard basic iron with silicon under 1 per cent have met with failure. At the beginning of this week 2,000 tons of this grade were sold by a furnace interest at $25.00, valley. While definite information is lacking in connection with the consumer of this tonnage it is understood to be the Edgewater Steel Company which a week ago was seeking a similar tonnage. While trading in the basic market for several weeks has lacked broadness, still the sale this week tends to clear away the befogged atmosphere that has developed prices in this district since the beginning of this month. While there has been no concerted effort on the part of furnaces to stimulate buying interest by quoting under the $25.00 level, sales of iron not conforming strictly to basic specifications have been made, sellers in some cases being middlemen. A better outlook through the entire pig iron structure is noted in this district and there is reason to believe the corner has been turned. Sales of Number 2 foundry iron continue to be conducted in carload lots on which producers are obtaining $26.00, valley.

Pig iron sales in Chicago so far this month are equal to the total for July. The price of $27.00 for the base grade is held firmly by all sellers. Total sales are slightly below the previous week, but still are heavy. Inquiry is active. Lake charcoal iron is $29.00 furnace or $32.15, Chicago.

While more hopefulness is shown this week the Birmingham pig iron market continues quiet. Sales are negligible and the surplus stock is being added to steadily. Production is being maintained. Inquiry fails to reveal any intentions of early shutting down of blast furnaces though any day may bring about the complete cessation at two or more stacks in this district. Quotations range between $24.00 and $25.00, though some of the larger and more active producers say they still are maintaining $27.00. Some iron was resold during the past week at $23.50 for Number 2 foundry. This was iron which was purchased before the turn of the present year.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry	27 00 to 27 50
Southern Fdy. No. 2	29 51 to 30 01
Lake Sup. Charcoal	32 15
Malleable	27 00 to 27 50

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20 112 sheets	$12 45
IX	14x20	14 05
IXX	14x20 56 sheets	17 57
IXXX	14x20	18 12
IXXXX	14x20	18 65
IC	20x28 112 sheets	27 50
IX	20x28	29 85
IXX	20x28 56 sheets	16 15
IXXX	20x28	17 20
IXXXX	20x28	18 25

TERNE PLATES.

		Per Box
IC	20x28, 40-lb. 112 sheets	$25 60
IX	20x28, 40-lb. " "	28 50
IC	20x28, 30-lb. " "	21 80
IX	20x28, 30-lb. " "	24 70
IC	20x28, 25-lb. " "	20 80
IX	20x28, 25-lb. " "	23 70
IC	20x28, 20-lb. " "	18 30
IV	20x28, 20-lb. " "	21 15
IC	20x28, 15-lb. " "	17 05
IC	20x28, 12-lb. " "	15 75
IC	20x28, 8-lb. " "	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28.	$14 05
Cokes, 90 lbs., base, 20x28.	14 30
Cokes, 100 lbs., base, 20x28.	14 65
Cokes, 107 lbs., base, IC 20x28	15 10
Cokes, 135 lbs. base, IX 20x28	17 15
Cokes, 155 lbs. base, 56 sheets	9 30
Cokes, 175 lbs. base, 56 sheets	10 10
Cokes, 195 lbs. base, 56 sheets	10 95

BLUE ANNEALED SHEETS.

Base .....per 100 lbs. $4 00

ONE PASS COLD ROLLED BLACK.

No. 18-20.....per 100 lbs.	$5 00
No. 22-24.....per 100 lbs.	5 05
No. 26.....per 100 lbs.	5 10
No. 27.....per 100 lbs.	5 15
No. 28.....per 100 lbs.	5 20
No. 29.....per 100 lbs.	5 30

GALVANIZED.

No. 16.....per 100 lbs.	$5 60
No. 18-20.....per 100 lbs.	5 75
No. 22-24.....per 100 lbs.	5 90
No. 26.....per 100 lbs.	6 05
No. 27.....per 100 lbs.	6 20
No. 28.....per 100 lbs.	6 35
No. 30.....per 100 lbs.	6 85

BAR SOLDER.

Warranted.
50-50 .....per 100 lbs. 24 50

Commercial.
45-55 .....per 100 lbs. 22 75
Plumbers .....per 100 lbs. 21 00

ZINC.

In Slabs..... 6 18

SHEET ZINC.

Cask lots, stock, 100 lbs... 11 00
Less than cask lots, 100 lbs. 11 50

BRASS.

Sheets, Chicago base.....22¾c
Mill Base 22c
Tubing, brazed, base.....28½c
Wire, base 19¼c

COPPER.

Sheets, Chicago base.....22¾c
Mill Base 21¾c
Tubing, seamless, base.....26c
Wire, No. 9 & 10 B. & S. Ga., ...21¾c
Wire, No. 11 B. & S. Ga...22c

American Pig 6 50
Bar 7 50

Sheet.
Full Coils.....per 100 lbs. 10 25
Cut coils.....per 100 lbs. 11 25

TIN.

Pig Tin .....per 100 lbs. 39 25
Bar Tin .....per 100 lbs. 40 25

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.
Barton's .....Net
White's .....Net

AMMUNITION.

Shells, Loaded, Peters.
Loaded with Black Powder 18%
Loaded with Smokeless Powder 18%

Winchester.
Smokeless Repeater Grade .....20 & 4%
Smokeless Leader Grade .....20 & 4%
Black Powder .....20 & 4%

U. M. C.
Nitro Club .....20 & 4%
Arrow .....20 & 4%
New Club .....20 & 4%

Gun Wads—per 1000.
Winchester 7- 8 gauge 10&7½%
" 9-10 gauge 10&7½%
" 11-28 gauge 10&7½%

ASBESTOS.

Paper up to 1/16.....6c per lb.
Rollboard .....6¼c per lb.
Millboard 3/32 to ¼....6c per lb.
Corrugated Paper (250 sq. ft. to roll)....$6.00 per roll

AUGERS.

Boring Machine.....40&10%
Carpenter's Nut 50%

Hollow.
Stearns, No. 4, doz.....$11 50

Post Hole.
Iwan's Post Hole and Well 35%
Vaughan's, 4 to 9 in.....$15 60

AXES.

First Quality, Single Bitted (unhandled, 3 to 4 lb., per doz.....$14 00

Good Quality, Single Bitted, same weight, per doz. 12 00

BARS, CROW.

Steel, 4 ft., 10 lb.....$ 80
Steel, 5 ft., 18 lb..... 1 40
Pinch bars, 5½ ft., 24 lb..... 1 60

BARS, WRECKING.

V. & B. No. 12	$0 34
V. & B. No. 24	0 43
V. & B. No. 324	0 57
V. & B. No. 30	0 48
V. & B. No. 330	0 63

BITS.

All Vaughan and Bushnell.

Screw Driver, No. 30, each	$ 27
Screw Driver, No. 1, each	16
Reamer, No. 80, each	41
Reamer, No. 100 each	41
Countersink, No. 13, each	20
Countersink, Nos. 14-15 each	27

BLADES, SAW.

Wood.
Atkins 30-in.

Nos.	6	40	26
	$8 90	$9 45	$5 40

BLOCKS.

Wooden 45%
Patent 45%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per Doz.
Crystal, 33"	23 90

Wash.

No. 760, Banner Globe (single) .....per doz.	$5 25
No. 652, Banner Globe (single) .....per doz.	6 75
No. 801, Brass King, ...per doz.	8 25
No. 860, Single—Plain Pump	6 25

BOLTS.

Carriage, Machine, etc.
Carriage, cut thread, ⅝x6 and sizes smaller and shorter 45-5%
Carriage sizes, larger and smaller and shorter....40-5%
Machine, ⅝x4 and sizes smaller and shorter.....50%
Machine, sizes larger and longer than ⅝x4.....40-10%
Stove 70-5%

BRACES, RATCHET.

V. & B. No. 444 8 in.	$4 54
V. & B. No. 222 8 in.	3 89
V. & B. No. 111 8 in.	3 55
V. & B. No. 11 8 in.	3 03

BRUSHES.

Hot Air Pipe Cleaning.
Bristle, with handle, each $0 85

Flue Cleaning.
Steel Only, each.....$1 25

BURRS.

Copper Burrs only.....30%

BUTTS.

Steel, antique copper or dull brass finish—case lots—3½x3½—per dozen pairs $3 48
4x4 ..... " " " 4 74

Heavy Bevel steel inside sets, case lots—.....per dozen sets 3 00

Steel bit keyed front door sets, each 2 00

Wrought brass bit keyed front door sets, each.... 4 00

Cylinder front door sets, each 3 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net	$ 45
" " 10 lb. cans, "	90
" " 25 lb. cans, "	2 00
Asbestos, 5 lb. cans "	45
Pecora.....per 100 lbs.	7 51

CHAINS.

Sher. Steel Safety Chain.

500-ft. coil, per ft.....	.02
100 to 500 ft., per ft....	.02½
Less than 100 ft., per ft	.03

Iron Jack Chain.
Box (12 yds.)..... .45

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent. 30%
Iwan's Iron Mountain only..35%
Standard .....30 to 40%

CHISELS.

Cold.

V. & B. No. 25, ¼ in., each	$0 26
V. & B. No. 25, ⅜ in., each	41

Diamond Point.

V. & B. No. 55, ¼ in.	0 31
V. & B. No. 55, ½ in.	0 48

Firmer Bevelled
Round Nose.

V. & B. No. 65, ¼ in.	0 29
V. & B. No. 65, ½ in.	0 40

Socket Firmer.
Cape.

V. & B. No. 50, ⅜ in.	0 31
V. & B. No. 50, ¾ in.	0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers .....List less 35-40%
Yankee, for Yankee Screw Drivers $6 00

CLAMPS.

Adjustable.
No. 100, Door (Stearns) doz. $22 00

Carpenters'.
Steel Bar..List price plus 20%

Hose.
Sherman's brass, ¾-inch per doz. $0 48
Double, brass, ¾-inch, per doz. 1 20

CLINKER TONGS

Front Rank, each.....$1 75
Per doz. 1 85

CLIPS.

Damper.
Acme, with tail pieces, per doz. $1 25
Non Rivet tail pieces, per doz. 25

COPPERS—Soldering.

Pointed Roofing.

3	lb. and heavier....per lb.	40c
2½	lb..... "	45c
2	lb..... "	48c
1½	lb..... "	55c
1	lb..... "	60c

CORD.

No. 7 Std. per doz. banks	$10 25
No. 8 " " " "	12 00

CORNICE BRAKES.

Chicago Steel Bending.
Nos. 1 to 6 B.....10%

COUPLINGS, HOSE.

Brass.....per doz. $2 25

CUT-OFFS

Kuehn's Korrekt Kutoffs:
Galv., plain, round or cor. rd.
Standard gauge 40%
26 gauge 10%

DAMPERS.

"Yankee" Hot Air.

7	inch, each	20c, doz.	$1 75
8	" "	25c, "	2 40
9	" "	30c, "	2 75
10	" "	32c, "	3 00

Smoke Pipe.

7	inch, each	$ 35
8	" "	40
9	" "	50
10	" "	60
12	" "	90

Reversible Check.

8	inch, each	$1 50
9	" "	1 70

DIGGERS.

Post Hole.
Iwan's Split Handle (Eureka)
4-ft. Handle...per doz. $14 00
7-ft. Handle...per doz. 36 00
Iwan's Hercules pattern, per doz. 14 90

DRILLS.

V. & B. Star, 12-inch Length.

¼, 5/16 and ⅜, each	$ 25
⅝, each	36
½, each	54
1¼, each	81

V. & B. Star, 18-inch Length.

5/16 and ⅜, each	$ 33
⅝, each	45
½, each	69
1¼, each	1 05

EAVES TROUGH.

Milcor .....
Galv. Crimpedge, crated...70-5%

ELBOWS—Conductor Pipe.

Milcor .....
Galv., plain or corrugated, round flat.
Crimp, Std. gauge.....60%
26 Gauge Std. gauge.....40%
24 Gauge Std. gauge.....10%

Square Corrugated.
Milcor .....
Standard gauge 45%
26 gauge 30%

Portico Elbows.
Standard Gauge Conductor Pipe.
plain or corrugated.
Not nested .....70 & 5%
Nested solid .....70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.

	Doz.
5-inch	$1 45
6-inch	1 60
7-inch	2 10

Special Corrugated.

	Doz.
6-inch	$1 45
7-inch	1 75

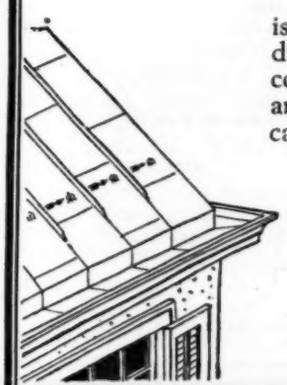
"An Ounce of Prevention is Worth a Pound of Cure"

THE place to make good roofing is in the factory—not on the roof. It is the amount of tin-lead coating *and the way it is applied* that determines the quality of roofing tin—in fact, an ounce of coating properly applied is worth a pound of patches.

TARGET AND ARROW

Look for this Trade ➵◎ *Mark on every Sheet*

ROOFING TIN



is made by an old Welsh process in which each sheet is repeatedly dipped and soaked in pots of molten metal and boiling palm oil, consuming thirty-five minutes to coat each sheet and assuring an amalgamation of the extra heavy coating with the base plate that cannot be obtained in any other way. No wonder a Target and Arrow roof outlasts the building it covers!

N. & G. TAYLOR CO.

Offices: Philadelphia, Pa.

Mills: Cumberland, Md.

Established 1810

Terne Plate Specialists

Since the beginning of the industry in this country.

Write for samples.

Our Brands

shown here ranging from 40 to 8 pound have proven their unusual lasting qualities by years of actual service.

A LARGE stock of all brands always carried in stock for immediate shipment. Also manufacturers of "Osborn Quality" Gutter and Conductor, 28 gauge being our standard

Let us quote on your requirements.

THE J. M. & L. A. OSBORN CO., CLEVELAND

Sheet Metal Workers' and Furnacemen's Supplies

Uniform, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60½
Lawn "	53%

FILES AND RASPS.

Heller's (American)	65-5%
American	65-5%
Arcade	60 & 10%
Black Diamond	50-5%
Eagle	60-10%
Great Western	60 & 10%
Kearney & Foot	60 & 10%
McClellan	60 & 10%
Nicholson	50-14%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.

Complete line Firepots and Torches...52%

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.	$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals.	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.	7 92
No. 83 Torch, Gasolene, 1 quart	5 40
No. 86 Torch, Gasolene, 1 pt.	4 05

Clayton & Lambert's.

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line. 48%

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt.	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.

Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.

Vesuvius, F.O.B. St. Louis 30% (Extra Disct. for large quantities)

Chas. A. Hones, Inc.	
Buzzer No. 1	$ 9 00
" " 2	12 00
" " 22	13 50
" " 42	15 00
" " 43	19 00

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
½ quart	$3 50
1 quart	4 90
2 quart	5 70

GALVANIZED WARE.

Pails (Competition), 8-qt.	$2 00
10-qt.	2 25
12-qt.	2 65
14-qt.	3 00
Wash tubs, No. 1	7 00
No. 2	7 25
No. 3	8 00

GARAGE DOOR HARDWARE.

Stanley .....All net

GAUGES.

Marking, Mortise, etc.....Nets

Wire.

Disston's 25%

GIMLETS.

Discount .....65% and 10%

GLASS.

Single Strength, A and B, all sizes .....83 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'	
1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED.

	Each, net
All V. and B.	
Blacksmiths' Hand, No. 0, 26-oz.	$1 00
Engineers' No. 1, 26-oz.	1 00
Farrier's, No. 7, 7-oz.	93
Machinists', No. 1, 7-oz.	78
Nail.	
Vanadium, No. 41, 20-oz. each	1 45
Vanadium, No. 41½, 16-oz., each	1 45
V. & B., No. 11½, 16-oz. each	1 04
Garden City, No. 111½, 16-oz., each	87
Tinner's Riveting, No. 1, 8-oz., each	82
Shoe, Steel, No. 1, 18-oz., each	65
Tack.	
Magnetic. No. 5, 4-oz., each	72

HAMMERS, HEAVY.

Farrier's	20%
Mason's. Single and Double Face	50%

HANDLES.

Axe. Hickory, No. 1 ....per doz.	4 00
Hickory, No. 2 .... "	3 00
1st quality, second growth	6 00
Special white, 2nd growth	5 00
Chisel. Hickory, Tanged, Firmer Assorted .....per doz.	55c
Hickory, Socket, Firmer, Assorted .....per doz.	70c
File.....per doz.	$1 20
Hammer and Hatchet. No. 1 per doz.	$0 90
Second growth hickory, per doz.	1 50
Soldering. Per doz.	$2 40

HANGERS.

Conductor Pipe. Milcor Perfection Wire	25%
Eaves Trough. Steel hangers	30%
Triple Twist wire	10%
Milcor Eclipse Wire	20%
Milcor Triplex Wire	15%
Milcor Milwaukee Extension	15%
Milcor Steel (galv. after forming) List plus	12½%
Milcor Selflock E. T. Wire, List plus	40%

HASPS.

Hinge, Wrought, with staples. Net

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.	$1 43
Half, No. 1, 15-oz.	1 25
Half, No. 3, 27-oz.	1 37
Claw, No. 1, 19-oz.	1 31
Flooring, No. 1, 20-oz.	1 43
Shingling, No. 1, 17-oz.	1 20
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25
Vanadium Steel. Half, No. 62, 22-oz.	$1 82
Underhill Pattern Lathing, 9 row, 19-oz.	2 29

HINGES.

Heavy Strap, in Bundles. 4 inch, dozen prs.	$1 12
5 " " "	1 57
6 " " "	1 93
8 " " "	3 21
Extra Heavy T in Bundles. 4 inch, dozen prs.	$1 74
5 " " "	1 85
6 " " "	2 31
8 " " "	3 97

HOES.

Garden .....Net

HOOKS.

Box. V. and B. No. 9, each	$0 26
Conductor. Milcor	
"Direct Drive" Wrought Iron for wood or brick	15%
Cotton. V. and B. No. 8, each	24
Hay. V. and B. No. 1, each	26
Bar Meat. V. and B. No. 26, ⅝", each	09
V. and B. No. 28, ½", each	16
Screw Meat. V. and B. No. 2, per gro.	6 50
Butchers' "S." V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

	Per. Ft.
¾-in. 2 ply molded	9½c to 12¾c
¾-in. cord	8½c to 10c
¾-in. wrapped	13½c

HUMIDIFIERS.

"Front-Rank," Automatic.
In single lots.....50%
In lots of 10 or more....50-5%
In lots of 25 or more..50-10%
Vapor pans, etc., each.....50%

IRONS.

Sad.	
Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30
E. C. Stearns'. No. OA Corner, doz. sets	$2 50
No. OB " " "	2 75

KNIVES.

Butcher.
Beechwood Handles, 6-inch blade 25%
Beechwood Handles, 7-inch blade 25%
Beechwood Handles, 8-inch blade 25%
Cooper's Hoop. 25%
Drawing.
Standard 25%
Adjustable 25%
Barton's Carpenters'.....25%
Hay.
Iwan's Solid Socket.....25%
Heath's 25%
Iwan's Sickle Edge.....25%
Iwan's Imp'd Serrated....25%
Hedge.
Challenge 25%
Disston's No. 1.....25%
Putty.
Common 25%
Lander's 25%
Scraping.
Beech Handles 25%
Lander's 25%

KNOBS.

Door.	
Mineral .....per doz.	$2 00
Porcelain ..... "	2 00
Jet ..... "	2 00

LADDERS.

Step.
Common, per ft.....28c
Common, with Shelf, add 10c
IXL 34c
Challenge, 6 to 9 ft.....55c
10 to 16 ft.....60c
Kant-Break, per lineal ft...75c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2, cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85
Ball Bearing. 4 blade, adjustable bearing. 14"	$7 50
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.
Extra heavy, 18-oz.....35%
Heavy, 16-oz.....40%
Medium, 14½-oz. 40%
Light, 13-oz. ... .50%

LEATHER LACING.

Cut, strictly No. 1.....45%

LEVELS.

Disston, No. 28 Asst.	$22 05
" No. 18, 20 in., each	1 83
" No. 22, 24 in., each	2 40
" Shafting, 6 in.	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.	5 75
" No. 2 Asst.	12 40
" 24-26 in., each	1 92
" 28-30 in., each	1 00

LIFTERS.

Stove Cover.	
Coppered .....per gro.	$6 00
Alaska ..... "	4 75

LOCKS.

Barn Door.	
No. 60 Stearn's..per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'.	
Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory .....per doz.	$3 00— 5 00
Tinners'. Hickory .....per doz.	$2 25

MATS.

Door.
National Rigid....5 & 10 & 5%
Acme Steel Flexible.....50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets...30%
Milcor .....
Galv. one piece stamped....40%

MOPS.

Cotton, Star (Cut Ends).				
Pounds	12'	15'	18'	24'-3-oz.
Per doz.	$4 00	4 35	5 50	7 00

Enterprise 16⅔%
Parker .....50 & 5%

NAILS.

Cut Steel	$4 70
Cut Iron	4 70
Wire. Common	3 80
Cement Coated. Small Lots	2 30

NETTING, POULTRY.

Galvanized before weaving 45-10%
Galvanized after weaving 45%

NIPPERS.

Nail Cutting.
V. & B. No. 30.....78c
Double Duty.
V. & B. No. 60.....76c
Hoof.
Heller's .....40 & 10%
V. & B. No. 52, each.....$2 25

NOZZLES.

Hose.	
Magic .....per doz.	$9 50
Diamond ..... "	5 75

OILERS.

Chase Pattern.
Brass and Copper.....10%
Zinc Plated .....40 & 5%
Railroad.
Brass .....20 & 5%
Coppered .....50 & 5%
Steel.
Copper Plated .....70 & 5%

OPENERS.

Delmonico .....per doz.	$1 30
Never Slip..... "	65

Crate.
V. & B...per doz. $7 25—11 00

Were your last sheets SOFT?

Inland
Open Hearth Galvanized

Inland
Open Hearth Box Annealed

Inland
Open Hearth Blue Annealed

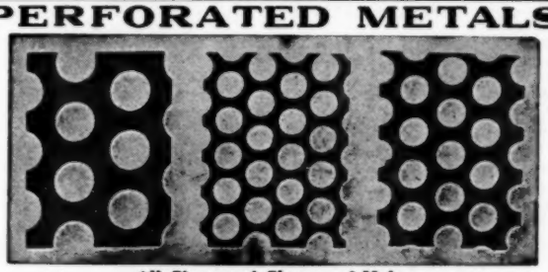
are soft and workable and INLAND COPPER Alloy Quality insures LONGER LIFE.

INLAND STEEL COMPANY
38 South Dearborn St., Chicago

Works:
Indiana Harbor, Ind.
Chicago Heights, ILL.

Branch Offices
Milwaukee St. Louis
St. Paul

PERFORATED METALS



All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATED METAL

THE HARRINGTON & KING PERFORATING CO.
610 NORTH UNION ST.-CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

CORTRIGHT METAL SHINGLES

Cortright hand-dipped shingles are first stamped out of prime roofing tin. After this they are immersed in a bath of molten zinc and receive a uniform coating on both sides and on all edges.

We also make shingles stamped from tight-coat galvanized sheet and from tin plate. We paint these either red or green.

CORTRIGHT METAL ROOFING CO.
Philadelphia — Chicago

"30 Years In the Game"

Here's a real old timer's O. K. on Kester *Acid-Core* Wire Solder for sheet metal work.

"Regarding sample of solder you sent me, I have been a sheet metal worker, owning and operating a shop for 30 years and know what I am talking about when I say it is a first class article."

Send for a test sample to try on your own work, and you'll say the same thing. Besides, Kester *saves time, labor* and *material* generally wasted by the old-fashioned way.

Sold everywhere by live dealers in one pound coils, in cartons, and on one, five and ten pound spools

Manufacturers
CHICAGO SOLDER COMPANY
4241 Wrightwood Avenue, Chicago

Direct Factory Representatives:
THE FAUCETTE HUSTON CO.
Chattanooga, Tenn.

LOUIS J. ZIESEL CO.
216 Market St.
San Francisco, Cal.

RICHARD F. ELY
66 W. Broadway
New York City

KESTER
Acid Core WIRE SOLDER

"Requires Only Heat"

PAILS.

Cream.
14-qt. without gauge, ... per doz. $9 50
18-qt. without gauge, ... per doz. 11 00
20-qt. without gauge, ... per doz. 11 75

Sap.
10-qt., IC Tin....per doz. $4 00
12- " " " " 5 50

Stock.

Galv. qts.	14	16	18	20
Per doz.	$9 75	10 75	12 75	14 50

Water.

Galvanized qts.	10	12	14
Per doz.	$5 75	6 50	7 25

PASTE

Asbestos Dry Paste:
200-lb. barrel $15 00
100-lb. barrel 8 00
35-lb. pail 3 25
10-lb. bag 1 00
5-lb. bag 55
2½-lb. cartons 30

PINCERS.

All V. & B.

Carpenters', cast steel, No.	6	8	10	12
Each	$0 43	$0 52	$0 61	$0 71

Blacksmiths', No. 10.....$0 64

PIPE.

Conductor.
"Interlock" Galvanized.
Crated and nested (all gauges) 60-7½%
Crated and not nested (all gauges) 60-2½%
Square Corrugated A and B and Octagon.
29 Gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%

"Interlock."
Crated and nested (all gauges) 60-7½%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.

Stove. Per 100 joints.
26 gauge, 5 inch E. C. nested $16 00
26 gauge, 6 inch E. C. nested 17 00
26 gauge, 7 inch E. C. nested 19 00
28 gauge, 5 inch E. C. nested 14 00
28 gauge, 6 inch E. C. nested 15 00
28 gauge, 7 inch E. C. nested 17 00
30 gauge, 5 inch E. C. nested 13 00
30 gauge, 6 inch E. C. nested 14 00
30 gauge, 7 inch E. C. nested 16 00
T-Joint Made up, 6-inch..... per 100 $40 00

Furnace Pipe.
Double Wall Pipe and Fittings 33⅓%
Single Wall Pipe, Round Pipe Fittings 33⅓%
Galvanized and Back Iron Pipe, Shoes, etc...33⅓%
Milcor Galvanized 40%

PLANES.

Stanley Iron Bench.....Net

PLIERS.

(V. & B.)
Nut, No. 3, each.....$2 60
" No. 5, each..... 64
" No. 25, each..... 69
Gas, No. 7, each..... 55
" No. 8, each..... 61
" No. 12, each..... 87
Lining or Crimping.
No. 35, each..... 64
Button's Pattern.
No. 6 each..... 61
No. 8 each..... 74
Double Duty, No. 106..... 50

POINTS, GLAZIERS'.

No. 1, 2 and 3..per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent, ... per doz. $0 75
Nickel Plated, coil handles ..... " 1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Furnace Tackle.....per doz. $0 60
Per gross 6 00
" Screw (encased) ...per doz. $0 85

Ventilating Register.
Per gross $9 00
Small, per pair..... 0 30
Large, per pair..... 0 50

PUNCHES.

Machine.	Each.
V. & B., No. 11-13, 1½x6	$0 19
V. & B., No. 90, ⅝x9	27
V. & B., No. 10, ⅝x10	29
V. & B., No. 1-6, ½x6	12

Center.
V. & B., No. 50, ⅝x4.....$0 14

Belt.
V. & B., No. 101-103.....$0 24
V. & B., No. 108-109..... 23
V. & B., No. 25, ass't..... 3 80

Samson Line.
No. 1 Hand { Doz. lots or less 40%
No. 2 Hand { 3 doz. lots ...Less 40 & 5%
No. 4 Hand { 6 doz. lots or more...Less 50%
No. 3 Bench { Less than doz. lots...Less 25%; Doz. lots or more...Less 40%

Extra Punches and Dies for Samson:
No. 1 Hand { Less than doz. lots....Less 25%
No. 2 Hand { Doz. lots, ...Less 33⅓%
No. 4 Hand { 3 doz. lots, ...Less 40%
No. 3 Bench { 6 doz. lots or more. ..Less 40 & 10%

PUTTY.

Commercial Putty, 100-lb. kits $3 55

QUADRANTS.

Malleable Iron Damper.....10%

RAZORS—SAFETY.

Gillette .....per doz. $45 00
Auto Strop ..... " 45 00
Gem ..... " 3 40
Gem (3 doz. lots).. " 3 00
Every Ready ..... " 3 40
Ever Ready (3 dz. lots) " 3 00

RAZORS STRAIGHT.

RAZOR STROPS.

Star (Honing) 50%

FLOOR REGISTERS AND BORDERS.

Cast Iron 20%
Steel and Semi-Steel.....33⅓%
Baseboard 33⅓%
Adjustable Ceiling Ventilators 33⅓%

Register Faces—Cast and Steel
Japanned, Bronzed and Plated, 4x6 to 14x14.....33⅓%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

ROOFING.

	Per Square
Best grade, slate surf. prep'd	$1 85
Best talc surfaced	2 20
Medium talc surfaced	1 50
Light talc surfaced	95
Red Rosin Sheeting, per ton	$72 00

ROPE.

Cotton.
Sisal.
1st Quality, base 14½c to 16½c
No. 2 .....13½c to 15c
Manila.
1st Quality standard brands .....18½c to 20½c
No. 2 .....17c to 18½
Hardware Grade, per lb. 17½c

SAWS.

Butchers'.
Atkins No. 2, 14-in.....$12 75
" No. 2, 18-in..... 14 30
" No. 7, 16-in..... 15 85
" No. 2, 22-in..... 15 92
" No. 7, 20-in..... 18 05
" No. 7, 24-in..... 20 20
" No. 7, 28-in..... 22 35

Compass.
Atkins No. 2, 10-in.....$ 5 45
" No. 10, 10-in..... 5 60
" Blades, No. 2, 10-in. 3 25
" " No. 2, 10-in. 3 30

Cross-Cut.
Atkins No. 221, 4 ft.....$3 03
" No. 221, 6-ft..... 4 45
" No. 221, 8-ft..... 6 07

Hand.
Copper Burrs only.....30%
" No. 96, 26-in..... 21 70

Hand and Rip.
Atkins No. 54, 20-in.....$19 50
" No. 54, 26-in..... 24 40
" No. 53, 16-in..... 18 10
" No. 53, 20-in..... 22 90
" No. 53, 24-in..... 26 60
" No. 53, 28-in..... 31 45
" No. 53, 30-in..... 34 15

Keyhole.
Atkins No. 1, complete.. $3 10
" No. 2, complete.. 3 70

Miter Box.
Atkins No. 1, 4x20.....$32 65
" No. 1, 5x22..... 38 00
" No. 1, 6x22..... 42 20

Pruning.
Atkins No. 20, 12-in.... $ 8 45
" No. 10, 16-in.... 13 15

Wood.
Atkins No. 202.....$ 7 19
" No. 318..... 8 75
" No. 906..... 15 50
" No. 1509..... 16 56

SCRAPERS.

Box.
No. 6, six blades each.... 25c
Hog.
No. 6, each..... 25c
Floor (Stearns).
No. 10, each.....$11 50

SCREEN DOOR HINGES.

Cast Iron .....gross $13 00
Steel ..... " 9 50

SCREWS.

Wood.
F. H. Bright 80%
R. H. Blued 78%
F. H. Jap'd 74%
F. H. Brass 76%
R. H. Brass 74%

Sheet Metal.
No. 7, ½x ⅛, per gross.$0 55
No. 10, ⅝x3/16, per gross. 75
No. 14, ⅞x ¼, per gross. 90

SCREW DRIVERS.

Uncle Sam Standard Head.
3 inches, each.....$ 45
5 inches, each..... 52
8 inches, each..... 68
12 inches, each..... 1 02

Uncle Sam Insulated Head.
3 inches, each.....$ 49
5 inches, each..... 57
8 inches, each..... 76
12 inches, each..... 1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes .....doz. $1 65
No. 100, in wooden boxes, ... doz. 1 50
No. 30, assorted.....doz. 39
No. 5, in cardboard boxes, ... doz. 1 35
No. 5, in wooden boxes, ... doz. 1 30
Rivet.
V. & B.
Farmers' $0 19
Tinners' 3-4 ..... 0 40
" 00-0..... 0 40
Saw.
Atkins No. 10....per doz. $3 30
" No. 12.... " 6 20

SHEARS.

	Per Doz.
Nickel Plated, Straight, 6"	$12 90
" " " 7"	14 85
" " " 8"	16 80
Japanned, Straight ....6"	11 00
" " ....7"	12 40
" " ....8"	13 80

SHEARS, TINNERS' & MACHINISTS'.

Viking $22 00
Lennox Throatless.
No. 18 .....35%
Shear blades.....10%
(f.o.b. Marshalltown, Iowa.)
Peerless Steel Squaring.
Foot Power.
No. 1—30", 18 ga. cap.....15%
No. 2—36", 18 ga. cap.....15%
No. 4—52", 18 ga. cap.....15%
No. 10—120", 22 ga. cap...15%
No. 4A—52", 16 ga. cap....15%
Cast Iron Foot Power.
No. 01, 30", 18 ga. cap....15%
Power Driven.
(No. 100 Series, 2 Shaft Drive.)
No. 142—42", 18 ga. cap....15%
(No. 200 Series, 2 Shaft Underneath Drive.)
No. 242—42", 14 ga. cap...15%
(No. 300 Series, 3 Shaft Underneath Drive.)
No. 342—42", 10 ga. cap....15%
No. 372—72", 10 ga. cap....15%
(No. 500 Series, 3 Shaft Underneath Drive.
No. 596—96", 10 ga. cap...15%
(No. 600 Series, 3 Shaft Underneath Drive.)
No. 6120—120", 3/16" cap..15%

SHINGLES.

	Per Square
Zinc (Illinois)	$18 00

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp...60%
26 gauge round flat crimp..40%
24 gauge round flat crimp..10%
Conductor 60%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 35	15 60	14 85	14 10
3	16 75	16 00	16 25	14 45
4	17 10	16 35	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle .....per doz. $3 50
Long Handle ..... " 3 00

SIFTERS.

Genuine Hunters, doz.....$2 50

SKATES.

Ice, Men's and Boys'.

	Per Pair
Key Clamp—rocker—bright finish	$ 76
Key Clamp—rocker—nickel finish	1 10
Key Clamp—rocker — pol. steel	1 36
Key Clamp—Hockey	1 38
Skate outfits	4 75

Women's and Girls'.
½ Key Clamp—rocker....$1 31
" " " hockey .. 1 38
Ice Skate outfit 5 00
Roller.
Ball Bearing—Boys' $1 55
Ball Bearing—Girls' 1 65